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## THE INDIAN JOURNAL OF STATISTICS

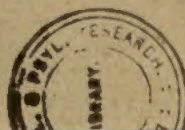
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# SANKHYĀ

## THE INDIAN JOURNAL OF STATISTICS

Edited by : P. C. MAHALANOBIS

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PARTS 1, 2 & 3

### FOREWORD

I have great pleasure in announcing that in future *Sankhyā* : The Indian Journal of Statistics would be published in two separate series. Series A will contain articles with emphasis on methods and techniques, and Series B on applications, data, and records.

I may recall briefly how the first number of *Sankhyā* was published. Since 1932, regular scientific meetings were being organised by Indian Statistical Institute at which statistical papers were presented. There was a pressing need for a journal in which such papers could be published; and the Council of the Indian Statistical Institute decided to start *Sankhyā* as the official organ of the Institute. The first number of *Sankhyā* was issued in June 1933; and since then the Journal is being published, by the Statistical Publishing Society, as the official organ of the Indian Statistical Institute.

The meaning of the word *Sankhyā* and the scope of the Journal, was explained as follows in the Editorial published in Volume 1 of *Sankhyā*.

"We believe that the idea underlying the integral concepts of statistics finds adequate expression in the ancient Indian word *sankhyā*. In Sanskrit the usual meaning is 'number', but the original root meaning was 'determinate knowledge'.<sup>1</sup> In the *Atharva-Veda*, a derivative form *sankhyātā* occurs both in the sense of 'well-known' as well as 'numbered'.

The history of the word *Sankhyā* shows the intimate connexion which has existed for more than 3000 years in the Indian mind between 'adequate knowledge' and 'number'.<sup>2</sup>

<sup>1</sup> The word is derived from *khyā* ('to perceive, view'; 'to be known', 'to make well-known' in Monier Williams's Dictionary). The root meaning is 'determinate knowledge', 'deliberation' or 'whatever helps us in obtaining determinate knowledge' according as the *krt* suffix is taken in the active or instrumental form. From the latter phase is derived the technical meaning of 'number'.

<sup>2</sup> *Atharva-Veda*, 4.25.2. It also occurs in 4.16.5 and 12.3.23. Winternitz after a full discussion of the date of the Vedic age says "we shall probably have to date the beginning of this development about 2000 or 2500 B.C., and the end of it between 750 and 500 B.C.": *A History of Indian Literature* (English Translation, Calcutta University, 1927). Vol. I, p. 310. While the present form of the *Atharva-Veda* is believed to be later than that of the *Rg-Veda*, much of its material is considered to be as old as, if not older than, many portions of the *Rg-Veda*. (Winternitz, p. 127). The word *sankhyā* was in common use in the sense of number in the time of *Pāṇini*.



As we interpret it, the fundamental aim of statistics is to give determinate and adequate knowledge of reality with the help of numbers and numerical analysis. The word *Sankhyā* embodies the same idea, and this is why we have chosen this name for the Indian Journal of Statistics. The spirit and outlook of *Sankhyā* will be universal, but its form and content must necessarily be, to some extent, regional.

We shall keep the special needs of India in view without, however, restricting the scope of the Journal in any way. We shall naturally devote closer attention to the collection and analysis of data relating to India, but we shall try to study all Indian questions in relation to world problems.

A research journal serves that narrow border land which separates the known from the unknown, and it is not always possible to see clearly the lines of future developments. We shall, therefore, invite papers of all kinds appraising them only on the basis of observational accuracy and logical reasoning. We shall publish carefully collected statistical materials irrespective of the subject even if they have not received any analytic treatment. We shall pay special attention to developments of the mathematical theory of statistics, and include abstracts and expositions of important papers published elsewhere. We shall try to help statistical researches on co-operative lines by bringing workers in different parts of India in contact, and by providing a medium for exchange of ideas. Bibliographies of Indian Statistical publications, numerical tables tending to reduce the labour of computation, book reviews, and notes and comments on current topics are some of the ways in which we shall try to make *Sankhyā* useful to statistical workers in India. Knowing that our resources are small we shall seek guidance and help from other countries, and we shall welcome and thankfully receive papers from abroad."

We have not been able to do all that we had in view. We are glad, however, that an increasing volume of matter is being received in recent years. The Council of the Indian Statistical Institute therefore decided that *Sankhyā* should be published from 1960 in two separate series. We take this opportunity of reminding ourselves of our original programme.

We thank the many readers and the subscribers to *Sankhyā* for their kind support and encouragement during the last twenty-seven years without which *Sankhyā* would not have occupied the position it holds today.

P. C. Mahalanobis  
Editor

# STATISTICAL CONTROL OF OPERATIONAL EFFICIENCY IN RINDERPEST ERADICATION CAMPAIGN

By V. G. PANSE, V. N. AMBLE

and

T. R. PURI

*Institute of Agricultural Research Statistics, New Delhi*

**SUMMARY** The Ministry of Food and Agriculture is carrying out a programme of mass vaccination of cattle and buffaloes for eradicating rinderpest disease from the country. The Institute of Agricultural Research Statistics has been collecting relevant data for assessing the progress of the campaign and for suggesting possible ways and means of improving the efficiency and economy of the field work.

In the pilot project with which the campaign was initiated the vaccinating teams employed had been of varying sizes. A study of the results revealed that a team of three persons was most efficient and teams of this size have been adopted in the States now.

From the data on vaccination in the campaign it was observed that there is a considerable wastage of vaccine in the field, amounting to about 20 percent of the vaccine supplied in the field campaign and about 60 percent at quarantine stations. It was shown that this wastage could be reduced by half if a suitable proportion of ampoules containing smaller number of doses than normal could be supplied to the field staff. A detailed study of the cost of production of vaccine at the principal vaccine producing centre at IVRI revealed that by judicious dispensation and use of smaller sized ampoules a saving of the order of Rs. 3 lakhs could be effected in vaccinating the ninety and odd million animals remaining to be immunised in the Second Five Year Plan. A suitable working procedure for dispensing the optimum proportion of ampoules containing smaller number of doses along with the normal sized ampoules was laid down and has been adopted now.

## 1. INTRODUCTION

1.1. Rinderpest is a contagious disease affecting cattle, buffaloes and goats, and when it breaks out, it takes a heavy toll of life and renders survivors almost useless for milk production or work. It is estimated that over a lakh of animals are affected each year and nearly 40 percent of them succumb. There is thus an annual loss of over a crore of rupees on this account. The Ministry of Food and Agriculture has launched a countrywide campaign for eradicating this disease in cattle and buffaloes by means of mass inoculation with a vaccine which is known to confer immunity for a number of years. The Institute of Agricultural Research Statistics has been assisting in the assessment of the progress of work in the campaign with a view not only to provide a summary of the progress of work but also make suggestions, on the basis of a critical examination of the data, for improving the efficiency and economy of the field work wherever possible. The manner in which this work has been carried out provides a good illustration of the kind of role that the statistician can play in improving the efficiency of large scale operations.



1.2. The question of taking concerted steps for the control of rinderpest was under consideration of the Government of India for a number of years. Ultimately in the First Five Year Plan, the Planning Commission allocated a sum of Rs. 15.7 lakhs to initiate work and a pilot scheme was launched in the areas south of river Krishna comprising the then States of Mysore, Coorg, parts of Bombay, Hyderabad, Andhra and Madras. The campaign has now been extended on a countrywide scale at an estimated expenditure of Rs. 281 lakhs in the Second Five Year Plan period and about Rs. 110 lakhs in the Third Five Year Plan.

1.3. In each State vaccination is carried out simultaneously in a few districts, varying from two to thirteen. In each district a few vaccinating teams (varying from two to nine) conduct the campaign, each visiting the villages in its jurisdiction one by one and vaccinating and branding the animals to mark them as vaccinated. All cattle and buffaloes above six months of age, excepting females in advanced stage of pregnancy and those which are sick at the time of vaccination, are expected to be vaccinated. In areas which are free from rinderpest, quarantine stations are set up along the borders with neighbouring susceptible areas to check infiltration of the disease through migration of infected animals, and these stations are wound up on the completion of the vaccination programme in the border areas. At these quarantine stations provision is made to vaccinate all the animals which enter the disease-free areas and are not already vaccinated.

The vaccine is prepared at the Indian Veterinary Research Institute (IVRI) at Izatnagar and some other centres for use in the field.  $\frac{1}{4}$  gm of freeze-dried vaccine is normally filled in an ampoule and provides 100 doses of vaccine if the titre is 1 : 16000. The number of doses in an ampoule goes down to 75 if the titre is 1 : 12000 and to 50 if the titre is 1 : 8000.

For assessing the progress of work, the field staff are required to fill a weekly return providing data on the work carried out. The information recorded includes the name of each of the villages visited, the total number of cattle and buffaloes in the village, the number of cattle and buffaloes vaccinated, the number of ampoules used for vaccination, besides such items as the duration of stay in the village, the time spent in vaccination, in the preparation for vaccination and on travel and finally the composition of the vaccinating team. These data are received at the Institute processed after scrutiny and periodical reports summarising the information are submitted to the Central Rinderpest Control Committee which gives overall guidance for the campaign.

## 2. AVERAGE COST OF VACCINATION PER ANIMAL

Simultaneously with the compilation of the weekly data mentioned in the previous section, additional data on different items contributing to the cost of the vaccination were collected from the various States in which the campaign was in operation. These items included expenditure of staff, cost of supply of vaccine,

## STATISTICAL CONTROL OF OPERATIONAL EFFICIENCY

depreciation on equipment and cost of its maintenance, freight charges and miscellaneous expenditure. The average cost of vaccination per animal was estimated to vary from 180P to 230P. A study of the break up of cost revealed that the expenditure on staff and cost of vaccine contributed about 60 and 20 percent respectively to the total cost. This indicated that any effort by which these items of cost could be economised would help to reduce the cost of the campaign.

### 3. STUDY OF PARTY SIZE

In the pilot project it was observed that parties of different sizes were working at different places within the same district. It was considered useful to study the variation in the efficiency of work in relation to the party size with a view to regulating the size of the vaccinating team for minimising the cost. The average number of vaccinations per individual per day was taken as a measure of efficiency of work. Statistical analysis of the data showed that the outturn of work did vary with the party size and it was always advantageous to have parties of smaller size. The average number of vaccinations per individual per working day in different States is given in Table 1. The figures in brackets indicate the numbers of party weeks on which the averages are based.

TABLE 1. THE VARIATION IN OUTPUT OF WORK WITH  
PARTY SIZE

state					
(1)	(2)	(3)	(4)	(5)	(6)
Andhra	—	—	58.4 (101)	59.0 (63)	49.7 (328)
Mysore	71.9 (283)	71.5 (165)	62.8 (109)	—	—
Bombay	—	98.0 (25)	76.5 (85)	61.1 (129)	—

It can be concluded that the smallest party size is generally the most efficient.

As the work of the campaign involves propaganda in the village, and vaccination and branding of the animals it was suggested that parties of size three should be normally employed—one person for doing propaganda in the village and collecting the animals, another for vaccination and the third for branding. This recommendation has been adopted in the formation of teams in the States where work was taken up after the results of the study were made known. In Andhra Pradesh where parties of size 6 had been formed, they are now split up into two parties of 3 each.



#### 4. ECONOMIC USE OF VACCINE

4.1 From the summaries prepared of the progress of the campaign it was observed that there was a considerable wastage of vaccine in the field. On an average about 20 percent of the vaccine supplied to the field staff in the campaign was wasted while at the quarantine stations the wastage amounted to as much as 58 percent. The main reason for the high wastage is the fact that each ampoule normally contains 100 doses of vaccine which have to be used up within about two hours once an ampoule is opened. Consequently, for any number of animals in a village over and above a multiple of hundred, some doses, varying from 1 to 99, have necessarily to be wasted. The considerably higher value of wastage at the quarantine stations is due to the fact that animals pass through them in small batches and every time a fresh ampoule has to be opened for vaccinating them.

4.2 It is obvious that if a proper proportion of ampoules containing a smaller number of doses were supplied in addition to those of the normal size, the wastage would be reduced. It can be shown (vide Appendix) that if ampoules of two sizes only are to be prepared, the smaller ampoule should contain half the normal number of doses. The optimum utilisation of the smaller ampoules is expected to result in the present wastage of an average of 23 doses for vaccinating 100 animals to be cut to about 11 doses. For optimum utilisation of vaccine 20 percent of the ampoules put out should contain half the number of doses. If this is done, it would result in a reduction of 34nP in the cost for every 100 animals vaccinated, which would mean a saving of Rs. 3.1 lakhs for the 91 million animals which had yet to be vaccinated at the time the study was carried out in April 1958.

4.3. An examination of the actual supply of vaccine carried out over a period of one year from first of September 1955 to the end of August 1956 revealed that ampoules containing different doses were, as a matter of fact, being supplied to different parties. However, the distribution was not regulated in regard to the size of the ampoules, and a party was supplied, almost always, ampoules of a single size at a time. Thus the variability in size of ampoules arising from fluctuations in titre did not result in any reduction in wastage.

With a view to regulating the distribution, the possibility of storing ampoules of different sizes and then supplying them in the desired proportions was next examined. The limited storage facilities available at the production centres did not permit exploiting the existing variation in titre to minimise the wastage of vaccine through judicious distribution. The only alternative left was to consider the practicability and economics of producing, specially, ampoules containing smaller doses in the desired proportion irrespective of the titre. With this in view the economics of production of vaccine was studied and a working procedure for production and distribution of ampoules containing different doses was formulated. This is described in the following sections.

## STATISTICAL CONTROL OF OPERATIONAL EFFICIENCY

4.4. In order to get an idea of the requirements of preparing ampoules of different sizes, data on the different components of cost involved in the manufacture of vaccine were collected at IVRI. From the data for 46 batches of vaccine prepared during the period January to March 1968, the cost of production of a gramme of freeze-dried vaccine was estimated as Rs. 8.66 and the cost of filling an ampoule including the cost of empty ampoule, the charges for labour involved in various operations such as necking and grinding, cost of desiccant, charges on depreciation, breakage and wastage worked out to Rs. 0.14. It was seen on the basis of the titrations of all the 123 batches manufactured in 1966-67 that the average number of doses per ampoule was 7.3. The average cost of production per dose would accordingly be 3.13nP. This cost is composed of the cost of production of dry vaccine and the cost of filling in the ampoules, the costs on these two components being 2.94nP and 0.19nP respectively.

According to the targets fixed by the Central Rinderpest Control Committee during their eighth meeting held in December 1967 at New Delhi, 11.3 million animals are to be immunised during the Second Five Year Plan period. Of these 22 million vaccinations had been carried out up to the end of March 1968 leaving a balance of 91 million to be vaccinated. As has been stated already, 123 doses of vaccine are required to vaccinate 100 animals if ampoules are prepared as at present. It follows that 123 ampoules of 100 doses are required to vaccinate 10000 animals. As has been said already, the wastage will be halved if 20 percent of ampoules contain only half the normal number of doses supplied in ampoules of bigger size. If this is done, it can be seen that only 11150 doses instead of 12300 will be required to vaccinate 10000 animals, these being contained in 100 ampoules of size 100 and in additional 23 ampoules of size 50. There will thus be no extra time, labour, wear and tear of the machinery or other cost involved in the filling in of ampoules in relation to the outlay required for vaccinating the animals in the population to be immunised. On the contrary, it will result in a reduction in the requirement of the freeze-dried vaccine. The saving on this account will be the cost of production of 1150 doses of vaccine at the rate of 2.94 nP per dose, which will amount to Rs. 33.81 for vaccinating every 10000 animals. In the course of vaccination of the remaining 91 million animals, an amount of nearly Rs. 3.1 lakhs is thus expected to be saved out of an outlay of Rs. 35 lakhs on **production of vaccine.**

It is clear from the various points considered in the foregoing sections that the preparation of a small proportion of the ampoules of smaller size will result in a definite saving in the expenditure incurred on the campaign, apart from the fact that the reduction in the amount of vaccine required to be produced for meeting the needs of a given cattle population will help in easing the difficulties in the supply position of goats for manufacturing the vaccine.

4.5. In the analysis of the situation discussed above ampoules of only two sizes have been considered and it has also been assumed that on any given occasion either the smaller or the larger ampoules would be used. The question of using two smaller sized ampoules instead of one of large size has not been considered. If we



relax this restriction and also consider the possibility of ampoules of three different sizes, many alternative cases arise for each of which optimum sizes of ampoules as also the proportions in which they are required to be distributed can be worked out. A number of these cases were examined (vide Appendix) and it was found that further savings ranging from Rs. 1 to 1½ lakhs could be effected by having ampoules of three sizes and using them in an appropriate manner. It was however thought that the production of ampoules of three sizes in suitable proportions might prove for the production centres too complicated a task to manage, as ampoules with very small amounts of vaccine would have to be produced. It would also require on the part of the field staff considerable care and judgement in deciding the correct size of ampoule to be opened each time. For these reasons it was considered that a solution based on the simplest alternative of manufacturing and supplying ampoules of only two sizes **was the most practicable at this stage.**

4.6. A note incorporating the results of the study was presented to the Central Rinderpest Control Committee at its meeting held in July 1958 and the committee approved the principle of exploring the possibilities of simultaneous production of ampoules containing a smaller amount of vaccine. Subsequently, the matter was discussed in detail with the Head of the Division of Biological Products at IVRI which is the principal centre for production of vaccine. Alternative procedures which could be adopted in practice were considered and as a result of the discussion it was agreed that one of these procedures should be adopted at IVRI. These procedures are described in the next section.

4.7. If the advantage of reduction in expenditure through the production of ampoules of smaller size is to be secured it would be necessary to determine carefully the proportion of ampoules of smaller size required and adopt a systematic procedure for the production, distribution and proper use of ampoules of the two sizes. The optimum procedure indicated by the data on field vaccination in the campaign was to produce twenty percent of the ampoules containing half the amount of vaccine normally filled in, i.e.  $\frac{1}{2}$  gm instead of  $\frac{1}{4}$  gm per ampoule. One simple way of doing this would be to use half the normal number of goats, e.g., about 50 instead of 100 at the production centre at IVRI, for producing the first batch of vaccine and fill it in the usual number of about 1,200 ampoules each containing  $\frac{1}{2}$  gm of vaccine. The next four batches of vaccine would each be produced from 100 goats, each batch being filled in with about 1,200 ampoules containing the usual  $\frac{1}{4}$  gm of vaccine. The ampoules of normal size and half the size should be distributed to each State in the same proportion of four to one each time the vaccine is despatched. The field staff should be given careful instructions to utilise the ampoules of the two sizes judiciously, using the smaller ampoule only when the number of animals remaining to be vaccinated is small enough to warrant its use. Coloured cotton plugs would be used to distinguish the ampoules of two sizes.

Although having the merit of reducing the outlay on the number of goats and increasing the effective number of vaccinations carried out in the field, the above

## 4.7.10.4. CONTROL OF ORGANONAL EFFICIENCY

providing suitable reduction in the general level of vaccination. As an illustration, the same output of vaccine per month at the same cost be produced at the same level as before but at proportion of the vaccine dose such ratio would be found to be superior to the present one. This will have the advantage being adopted, but will increase the quantity of doses available for active protection in the field. It will require, however, some augmentation in staff.

At present the vaccination process and stock points proposed to be set up throughout the country would be desirable to meet their various requirements through various controlling centres down to under the command. The large wastage would be found in small and medium. This increased requirement would result in an increase in the programme. A number of centres are well known to be worked out on the basis of the estimated needs of the vaccination stations at and what they are set up.

4.8. The first procedure described in section 4.6 is being tried at IVRI and the dispensing of vaccine in smaller quantities simultaneously with expansion of the field and has commenced from January of this year. The data for assessing the impact of the new procedure in obtaining economy are being collected.

4.9. Attempts are being made to step up the titre of vaccine through such measures as improvement in the air conditioning of the plant. Any success in this measure is likely to result in considerable savings since the cost of production of vaccine will go down in proportion to the increase in titre. If the titre could be doubled there would be a saving of over fifteen lakhs of rupees. It is necessary to point out, however, that even in such a case it is desirable to restrict the size of the ampoule to contain not more than a hundred doses. The reason for this is that if a larger number of doses were packed in an ampoule the field staff would not be able to utilize all the vaccine in an ampoule within a period of two hours. It is clear that even with an increased potency of the vaccine, ampoules of about one hundred doses and half of that size should be distributed in the same optimum proportion of 4 : 1.

## ACKNOWLEDGEMENT

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## Appendix

### OPTIMUM SIZE OF AMPOULE FOR MINIMISING WASTAGE OF VACCINE

From the data furnished by the field staff it was observed that the number of animals in a village followed an approximately rectangular distribution excepting for very small and very large villages. In the subsequent calculations it has accordingly been assumed that the number of animals in a village follows a rectangular distribution. Alternative cases of the use of ampoules of two sizes and three sizes have been considered. In either case the instructions for the use of ampoules may be simplified by stipulating on any given occasion when a choice among ampoules of different sizes has to be made, that only one ampoule of different sizes has to be made, that only one ampoule may be used [cases I(a) and II(a)]. On the other hand this restriction may be relaxed and judicious choice of two ampoules instead of one of a larger size allowed. In the latter situation one alternative possibility [case I (b)] arises in the case of ampoules of two sizes and five alternatives [cases II(b), (i), to (v)] have to be considered with ampoules of three sizes. These cases have been examined in the following sections. In each case the optimum sizes of the ampoules are determined along with the corresponding proportions in which they will be required in the field, taking the current wastage of vaccine at an average of 23 doses for every 100 animals vaccinated. The savings expected to be secured through the optimum use in the course of vaccinating 91 million animals have also been calculated.

*Case I(a): Ampoules of two sizes  $b$  and  $a$ ,  $b < a$ .* Let the normal size of the ampoule be  $a$ . The average wastage of vaccine expected per village on the basis of rectangular distribution of the number of animals per village is  $\frac{1}{2}(a-1)$  doses. If instead an ampoule of a smaller size ' $b$ ' is used whenever the number of animals to be vaccinated, is  $b$  or less the wastage per village will reduce to

$$\frac{\frac{b-1}{2}b + \frac{a-b-1}{2}(a-b)}{a} \dots (1)$$

Expression (1) can be put in the form

$$\frac{1}{4}a[(2b-a)^2 + a(a-2)]$$

which will be minimum when  $b = a/2$ , showing that if ampoules of two sizes are to be prepared and only one used on each occasion, one size should be half of the other in order to minimise the wastage. The expected wastage per village would then be  $\frac{1}{4}(a-2)$  doses, which is nearly one half of the original wastage.

Let  $x$  doses of vaccine be the wastage per 100 animals vaccinated when ampoules of only normal size ' $a$ ' are used. To vaccinate ' $100a$ ' animals in a group of villages, vaccine required if ampoules of size  $a$  are only used, will be on an average  $(100+x)a$  doses, i.e.  $(100+x)$  ampoules of size  $a$ . If an ampoule of half size used in

# STATISTICAL CONTROL OF OPERATIONAL EFFICIENCY

the proportion of the normal size  $a$ . When it is necessary, the total number of ampoules must still be kept unchanged whereas the wastage will be lowered. Let  $t$  be the number of ampoules of half size. Then

$$(100+x-t)a + \frac{ta}{2} \left( 100 + \frac{x}{2} \right) a \quad \dots (3)$$

which gives  $t = x$ .

We shall thus require 100 ampoules of size  $a$  and  $x$  ampoules of size  $a/2$ . Taking  $x = 23$ , the saving effected in vaccinating 1000 animals will therefore be the cost of vaccine required for  $\frac{23a}{2}$  doses, i.e. 23 doses of vaccine for every 200 animals. A saving of Rs. 3.1 lakhs may therefore be expected to accrue in vaccinating 91 million animals.

*Case 1(b): Ampoules of two sizes  $b$  and  $a/2b = a$ .* The instructions for the use of ampoules in this case will be as follows:

If the number of animals over and above multiples of  $a$  is less than or equal to  $b$ , use one ampoule of size  $b$ .

In other words, if  $0 < \text{mod } a \leq b$ , use one ampoule of size  $b$ . On the other hand, if  $b < \text{mod } a \leq 2b$ , use two ampoules of size  $b$ . Lastly, if  $2b < \text{mod } a = a$ , use one ampoule of size  $a$ .

Subject to these restrictions, the optimum value of  $b$  relatively to  $a$  for minimising the wastage can be obtained by following the same procedure as in the previous case. This value turns out to be  $a/3$ . The corresponding optimum proportion for ampoules of sizes  $a$  and  $a/3$  can be shown to be  $2 : 1$  and the wastage would reduce to one-third of the current value. The savings which may be expected to be effected in vaccinating 91 million animals, taking into consideration the cost of vaccine saved and the cost of extra ampoules required to be used, are of the order of Rs. 3.8 lakhs.

*Case 11(a): Ampoules of sizes  $d$ ,  $c$  and  $a$ ,  $d < c < a$ .* The instructions for the use of ampoules would be as follows:

- $0 < \text{mod } a \leq d$  use one ampoule of size  $d$ .
- $d < \text{mod } a \leq c$  use one ampoule of size  $c$ .
- $c < \text{mod } a < a$  use one ampoule of size  $a$ .

The optimum values of  $c$  and  $d$  for minimising the wastage turn to be two-thirds and one-third of the normal size  $a$  and the wastage would reduce to one-third of the current value. The corresponding optimum proportions of the ampoules of sizes  $a$ ,  $2a/3$  and  $a/3$  can be shown to be  $6 : 1 : 1$ . The savings effected in vaccinating 91 million animals will be of the order of Rs. 4.1 lakhs.



Case II(b) (i) : Ampoules of sizes  $d$ ,  $c$  and  $a$ ,  $d < c \leq 2d < a \leq 2c$ . The instructions for the use of ampoules to be as follows :

$$0 < \text{mod } a \leq d$$

use an ampoule of size  $d$ .

$$d < \text{mod } a \leq c < 2d$$

use an ampoule of size  $c$ .

$$2d < \text{mod } a \leq c+d < a$$

use two ampoules, one of size  $c$  and the other of size  $d$ .

$$c+d < \text{mod } a < a \leq 2c$$

use an ampoule of size  $a$ .

These instructions may be conveniently shown diagrammatically as follows :

$$\begin{array}{l} \text{Use ampoule of size : } d \quad c \quad c \quad \text{and} \quad d \quad a \\ \text{mod } a : \quad d \quad c \quad c+d \quad a \end{array}$$

The sizes  $c$  and  $d$  in this case for minimising the wastage turn out to be one-half and one-fourth of the normal size  $a$  and the wastage would reduce to one-fourth of the current value. The corresponding optimum proportions for ampoules of sizes,  $a$ ,  $a/2$  and  $a/4$  are 4 : 1 : 1. The savings which may be expected to be effected in this case, taking into consideration the cost of vaccine saved and the cost of extra ampoules required to be used, are of the order of Rs. 4.4 lakhs.

Case II(b) (ii) : Ampoules of sizes  $d$ ,  $c$  and  $a$ ,  $2d < c < a \leq c+d$ . The instructions for the use of ampoules would be as follows :

$$0 < \text{mod } a \leq d \quad : \quad \text{use one ampoule of size } d.$$

$$d < \text{mod } a \leq 2d < c \quad \text{use two ampoules of size } d.$$

$$2d < \text{mod } a \leq c \quad \text{use one ampoule of size } c.$$

$$c < \text{mod } a < a \leq c+d \quad \text{use one ampoule of size } a.$$

$$\begin{array}{l} \text{Use ampoule of size : } d \quad d \quad \text{and} \quad d \quad c \quad a \\ \text{mod } a : \quad d \quad 2d \quad c \quad a \end{array}$$

The optimum values of  $c$  and  $d$  can be shown to be  $3a/4$  and  $a/4$  and the wastage is expected to reduce to one-fourth of the current value. The corresponding optimum proportions for the ampoules of sizes  $a$ ,  $3a/4$  and  $a/4$  turn out to be 8 : 1 : 3. The savings expected to be effected in this case, taking into consideration the cost of vaccine saved and the cost of extra ampoules required to be used turn out to be the same as in the previous case, i.e. of the order of Rs. 4.4 lakhs.

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*Case II(b) (iii): Ampoules of sizes  $d$ ,  $c$  and  $a$ ,  $2d < c < c+d < a$ . The instructions for the use of ampoules would be as follows:*

$0 < \text{mod } a < d$  use one ampoule of size  $d$ .

$d < \text{mod } a < 2d < c$  use two ampoules of size  $d$ .

$2d < \text{mod } a < c$  use one ampoule of size  $c$ .

$c < \text{mod } a < c+d < a$  use two ampoules, one of size  $c$  and the other of size  $d$ .

$c+d < \text{mod } a < 2c$  use one ampoule of size  $a$ .

Use ampoule of size :  $\frac{d}{\text{mod } a} : \frac{d}{d} \frac{d}{c} \text{ and } \frac{d}{2d} \frac{c}{c} \text{ and } \frac{d}{c+d} \frac{a}{a}$ .

The two sizes  $c$  and  $d$  for minimising the wastage can be shown to be  $3a/5$  and  $a/5$  respectively and the wastage is expected to reduce to one-fifth of the current value. The corresponding optimum proportions for the ampoules of sizes,  $a$ ,  $3a/5$  and  $a/5$  are  $5 : 1 : 2$ , and the savings expected for vaccinating 91 million animals are Rs. 4.6 lakhs.

*Case II(b) (iv): Ampoules of sizes  $d$ ,  $c$  and  $a$ ,  $d < c < 2d < a$ . The instructions for the use of ampoules would be as follows:*

$0 < \text{mod } a < d$  use one ampoule of size  $d$ .

$d < \text{mod } a < c < 2d$  use one ampoule of size  $c$ .

$2c < \text{mod } a < c+d < a$  use two ampoules, one of size  $c$  and the other of size  $d$ .

$c+d < \text{mod } a < 2c < a$  use two ampoules of size  $c$ .

$2c < \text{mod } a < a$  use an ampoule of size  $a$ .

Use ampoule of size :  $\frac{d}{\text{mod } a} : \frac{c}{d} \frac{c}{c} \text{ and } \frac{d}{c+d} \frac{c}{c} \text{ and } \frac{c}{2c} \frac{a}{a}$ .

The optimum values of  $c$  and  $d$  in this case are  $2a/5$  and  $a/5$  and the wastage is expected to reduce to one-fifth of the current value as in the last case. The corresponding optimum proportions for the ampoules of sizes  $a$ ,  $2a/5$  and  $a/5$  turn out to be  $5 : 2 : 1$ . The savings expected to be effected in this case, taking into consideration the cost of vaccine saved and the cost of extra ampoules required to be used turn out to be the same as in the previous case, i.e. of the order of Rs. 4.6 lakhs.



Case II(b) (v) : Ampoules of sizes  $d$ ,  $c$  and  $a$ ,  $d < c < 2d < a$ . The instructions for the use of ampoules would be as follows :

$0 < \text{mod } a < d$  use one ampoule of size  $d$ .

$d < \text{mod } a < 2d < c$  use two ampoules of size  $d$ .

$2d < \text{mod } a < c$  use one ampoule of size  $d$ .

$c < \text{mod } a < c+d < a$  use two ampoules, one of size  $c$  and the other of size  $d$ .

$c+d < \text{mod } a < 2c < a$  use two ampoules of size  $c$ .

$2c < \text{mod } a < a$  use one ampoule of size  $a$ .

Use ampoule of size :  $\frac{d}{\text{mod } a} : \frac{d}{d} \text{ and } \frac{d}{2d} \frac{c}{c} \text{ and } \frac{d}{c+d} \frac{c}{2c} \text{ and } \frac{c}{a}$ .

The two sizes  $c$  and  $d$  for minimising the wastage can be shown to be  $\frac{16a}{39}$  and  $\frac{2a}{13}$

and the wastage is expected to be reduced to  $\frac{7}{39}$  of the current value. The

corresponding optimum proportions for the ampoules of sizes  $a$ ,  $\frac{16a}{39}$  and  $\frac{2a}{13}$  turn out

to be 12 : 5 : 4. The savings expected to be effected in this case for vaccinating 91 million animals, taking into consideration the cost of vaccine saved and the cost of extra ampoules required to be used turn out to be Rs. 4.6 lakhs.

The results obtained in the various cases considered are summarised in the following table :

case	number of sizes of ampoules	number of decisions in use of ampoules	optimum size of ampoules	proportions of supply of different sizes of ampoules	expected savings (lakh Rs.)
I(a)	2	2	$1, \frac{1}{2}$	4 : 1	3.1
I(b)	2	3	$1, \frac{1}{2}$	2 : 1	3.8
II(a)	3	3	$1, \frac{1}{3}, \frac{1}{3}$	6 : 1 : 1	4.1
II(b)(i)	3	3	$1, \frac{1}{2}, \frac{1}{2}$	4 : 1 : 1	4.4
II(b)(ii)	3	3	$1, \frac{1}{3}, \frac{1}{3}$	8 : 1 : 3	4.4
II(b)(iii)	3	4	$1, \frac{1}{3}, \frac{1}{3}$	5 : 1 : 2	4.6
II(b)(iv)	3	4	$1, \frac{1}{3}, \frac{1}{3}$	5 : 2 : 1	4.6
II(b)(v)	3	5	$1, \frac{16}{39}, \frac{2}{13}$	12 : 5 : 4	4.6

# FACTORS AFFECTING BLOOD PRESSURE OF INDIAN SOLDIERS

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**SUMMARY** Blood pressure measurements made on 1000 Indian soldiers of the Indian Army show that the average values for Indians are lower than those generally used by medical practitioners in India. European Indian blood pressures are lower than those of Chinese and Americans. During the period of the 1940s, the mean blood pressure increased by about 10 mm. Hg. in the last year. There is a strong positive correlation between weight and blood pressure and between a steady increase in height and blood pressure. Blood pressure of soldiers is found to vary significantly among areas of geographical origin, constitution, and between vegetarians and non-vegetarians. The southern States of India constitute a compact area of low blood pressure whereas in the north the blood pressure is higher.

## INTRODUCTION

The chief value of blood pressure measurements is in the indication that they provide regarding the physical condition of the persons measured. Blood pressure is considered an important element of even routine medical examinations. Medical practitioners have certain standards against which observed readings in any particular case may be compared. These standard values do indeed take account of certain progressive changes that are supposed to take place as age increases, but do not usually depend on any other factor that may have relation to blood pressure. For instance, in India no distinction in standards is made for the different geographical regions, or for the different racial communities.

The present paper which is based on a survey of soldiers of the Indian Army throws some light on these regional and racial differences, as well as on differences due to age, height, weight, vegetarianism and marital status.

## THE DATA

Measurements of blood pressure used in this paper were recorded during the course of a survey primarily intended to obtain certain body measurements needed for use in standardisation of clothing sizes. A medical officer (Capt. D. N. Bhattacharya) was in charge of the measuring team. While the body measurements were in progress, he was able to find time for taking readings of blood pressure as well as certain other physiological observations. Readings of both systolic and diastolic pressure were taken on right as well as left arms with the subject in a sitting posture. All measurements were made using a standard mercury sphygmomanometer, the same instrument being used in every case. The systolic reading is the pressure at which 'the first rhythmic sounds appear' and the diastolic reading denotes the pressure at which 'the clear sound becomes muffled.'

The results of investigation into a number of cases of extremely low blood pressure found in this series were reported in a previous paper (1957). It was shown therein that the low values were not likely to be due to errors of measurement as a re-check after the lapse of three years by a second observer confirmed the general accuracy of the original measurements.



Blood pressure measurements were taken in all on 2598 soldiers. As there were only small numbers at ages above 39 and below 18, totalling altogether 36, these were left out from further analysis. Measurements on the remaining 2562 soldiers are dealt with in this paper.

The above 2562 soldiers do not constitute a random sample of soldiers of the Indian Army, much less of the general population in India. Recruits to the Indian Army are in the first place all volunteers. It is reasonable to expect that such volunteers will not be a fully representative cross-section of the general population, but will come in varying proportion from different economic, social and regional strata. In the second place, even amongst the volunteers only such individuals are selected as come up to certain standards of height, weight and other physical characteristics.

From the army itself, selection was in such a way that (a) not less than 100 people belonging to certain 'army classes' (some of which are more or less arbitrary groupings depending on regional and other considerations) were obtained and (b) the units to be surveyed were located at the time of the survey in or around Delhi (31 October 1952 to 24 December 1952) or around Ambala (19 March 1953 to 1 June 1953). A few units were selected also in Jammu and Kashmir (13 June 1953 to 11 July 1953) and some other places (16 July 1953 to 30 August 1953).

We have, therefore, to bear in mind these limitations in the selection of the sample while drawing any conclusions from the data.

#### ACCURACY OF MEASUREMENTS

Though the measuring instrument was graduated to indicate multiples of two millimeters of mercury and a few readings were recorded correct even to millimeters, it is evident from the data that a margin of error of at least five millimeters on either side of the reading is likely. This can be seen from the frequency distribution of blood pressures given in Table 1.

TABLE 1. FREQUENCY DISTRIBUTION OF BLOOD PRESSURE

blood pressure	frequency	blood pressure	frequency
diastolic		systolic	
30—34	7	75—79	3
35—39	7	80—84	63
40—44	392	85—89	52
45—49	75	90—94	366
50—54	853	95—99	184
55—59	75	100—104	666
60—64	682	105—109	211
65—69	47	110—114	559
70—74	336	115—119	86
75—79	16	120—124	261
80—84	61	125—129	32
85—89	1	130—134	61
90—94	10	135—139	7
		140—144	10
		145—149	—
		150—154	1
total	2562	total	2562

## FACTORS AFFECTING BLOOD PRESSURE OF INDIAN SOLDIERS

The heaping up in the intervals including multiples of ten clearly indicates a tendency to record in round numbers readings which should have been spread over a range of ten millimeters about the round numbers. This tendency is much more pronounced in diastolic pressure than in systolic pressure.

Another similar limitation on accuracy of measurement is seen from Table 2 in which all the readings are sorted out according to the digit in the units place.

TABLE 2. FREQUENCY OF DIGITS IN THE UNITS PLACE

digit	number of readings		digit	number of readings	
	systolic	diastolic		systolic	diastolic
0	1416	2065	5	1	5
1	0	0	6	282	124
2	105	24	7	0	0
3	0	0	8	292	92
4	666	252	9	0	0
total	2562	2562			

Zero is the most frequent digit. Nearly 57 percent of systolic readings and 81 percent of diastolic readings end in zero and are correct only to the nearest tens. Except for six readings ending in 5 none of the readings ends in an odd digit. This shows that even the readings which were not rounded off to the nearest tens were rounded off to even numbers. This latter is understandable as the instrument was graduated to show only even numbers but the abundance of zeros indicates a more serious lack of precision. However, as all the readings used in this paper were made by a single observer this lack of precision will not materially affect the comparisons we make. It may have the effect of slightly increasing the variance and hence of making the differences appear less significant than they really are.

### RIGHT ARM AND LEFT ARM

The question whether the arm (right or left) on which blood pressure is measured makes any difference in the reading may be of some interest. We have parallel measurements on both arms of 2317 soldiers. Table 3 gives the frequency distribution of right minus left for systolic and diastolic pressures.

The difference ranges from  $-28$  to  $+26$ . Some at least of the extreme values may be due to clerical errors, or even to slips on the part of the observer. The values outside the range  $-15$  to  $+15$  number only about half percent of the total. Fluctuations of 15 millimeters can occur without any particular reason even within a short interval of time.

The large majority of differences are either zero or nearly zero but the *t*-test shows that the mean values are significantly different from zero.

The means for the right arm are higher by 1.81 mm. for systolic pressure and 0.78 mm. for diastolic pressure. As the right hand measurement in every case was



taken first and left hand measurement later, it is possible that these differences are entirely due to the initial nervousness of the subject. In any case, differences of this magnitude are of no practical importance.

TABLE 3. DIFFERENCE BETWEEN RIGHT ARM AND LEFT ARM

right minus left (in mm.)	frequency		right minus left (in mm.)	frequency	
	systolic	diastolic		systolic	diastolic
(1)	(2)	(3)	(4)	(5)	(6)
-28	—	1	5	—	1
-20	—	1	6	160	101
-14	1	6	8	64	19
-10	10	27	10	69	84
-8	7	11	12	12	2
-6	19	26	14	14	9
-5	—	2	15	1	2
-4	30	39	16	8	4
-2	30	35	18	4	1
0	1340	1741	20	2	4
2	167	47	22	1	—
4	377	152	24	—	1
			26	1	1
total	2317	2317		...	...
mean	1.81	0.78		...	...
sd	3.52	3.00		...	...
t	24.8**	13.06**		...	...

\*\* Significant at 1% level.

The coefficients of correlation between right and left come out as 0.92 for systolic and 0.93 for diastolic. These values show that when the measurement of blood pressure on either arm is known, a further measurement on the other arm can supply very little additional information.

In the rest of this paper, we shall deal only with blood-pressure measurements on the right arm.

#### RELATION BETWEEN BLOOD PRESSURE AND AGE

Table 4 gives in columns 3 to 6 the observed mean values and standard deviations for each age from 18 to 39. There is no doubt that systolic as well as diastolic pressure increases somewhat as age advances. The maximum difference between high and low in either pressure is only about 8 millimeters (less than half a millimeter per year), and the increase is by no means steady from age to age. Further, the figures in columns 5 and 6 show that the standard deviations are of the order of 8 to 13 millimeters at different ages, the overall standard deviations being 11.3 mm. for systolic pressure and 10.4 mm. for diastolic pressure. In view of the wide margin of variation, it is doubtful whether for the period considered here there is any need to make allowances for age in clinical standards of blood pressure.

To test the significance of the different components of variation relevant figures are given in Table 5. It can be seen that variation between ages is highly significant compared to the variation within ages. Further, in systolic pressure

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polynomial trend of the first three degrees is calculated, allowing for diastolic pressure always to be equal enough to represent average blood. In Figures 1 and 2 the values of averages are shown along with the first and third degree polynomials for diastolic pressure, and the straight line for diastolic pressure. Between the ages 18 to 39 there is a steeper increase in systolic pressure than at earlier ages. For diastolic pressure, the increase per year is more or less the same for the entire period from 18 to 39. Polynomial values are shown in columns 7 to 9 of Table 4.

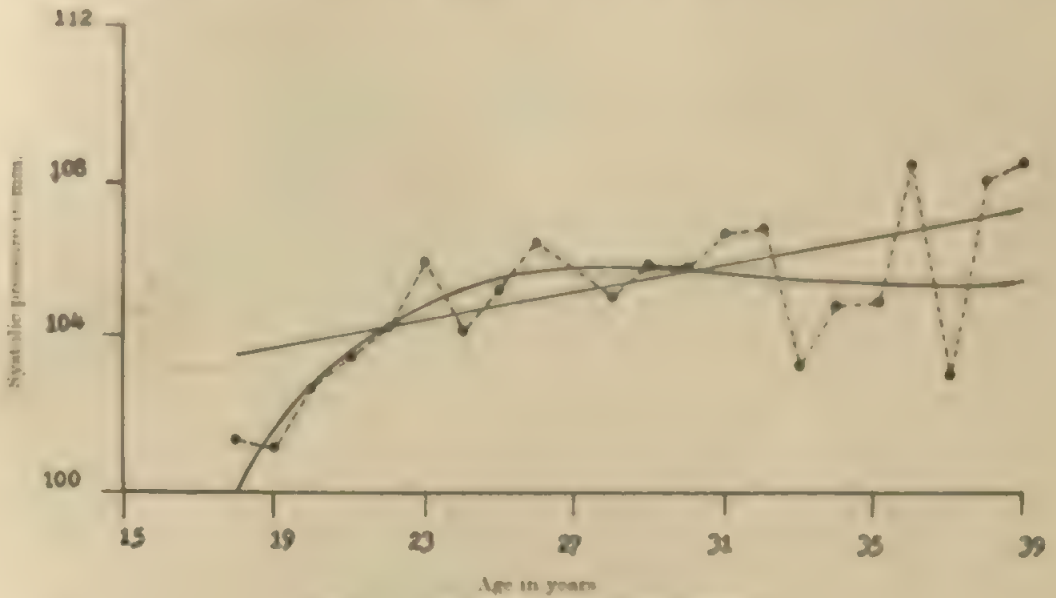


Figure 1. Age trend of systolic blood pressure

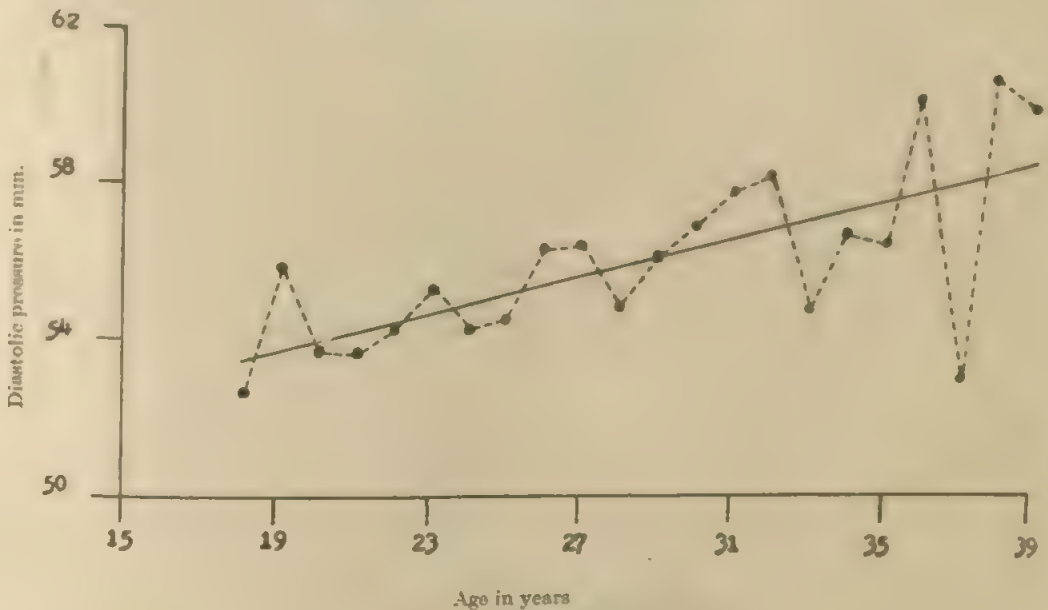


Figure 2. Age trend of diastolic blood pressure



TABLE 4. MEAN VALUES AND STANDARD DEVIATIONS OF BLOOD PRESSURE (mm.) AT DIFFERENT AGES

age in years	number of subjects	observed mean		standard deviation		values calculated from polynomials		
		systolic	diastolic	systolic	diastolic	systolic first degree	systolic third degree	diastolic first degree
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
18	34	101.4	52.7	8.7	8.6	103.5	100.3	53.5
19	63	101.1	52.9	9.9	11.5	103.7	101.7	53.8
20	120	102.7	53.7	11.0	9.7	103.9	102.8	54.0
21	175	103.5	53.7	11.1	9.9	104.1	103.7	54.2
22	196	104.3	54.3	10.9	9.1	104.3	104.4	54.5
23	215	106.0	55.3	11.1	10.1	104.4	104.9	54.7
24	171	104.2	54.3	10.6	9.6	104.6	105.3	55.0
25	219	105.2	54.5	11.2	10.3	104.8	105.6	55.2
26	159	106.4	56.3	11.6	10.1	105.0	105.7	55.4
27	157	105.8	56.4	11.2	10.6	105.2	105.8	55.7
28	172	105.1	54.9	10.6	9.9	105.4	105.8	55.9
29	176	105.9	56.1	11.2	10.4	105.5	105.8	56.1
30	176	105.9	56.9	11.6	10.3	105.7	105.7	56.4
31	137	106.7	57.8	11.3	10.7	105.9	105.6	56.6
32	99	106.8	58.2	12.5	12.0	106.1	105.6	56.8
33	87	103.3	54.7	11.4	10.2	106.3	105.5	57.1
34	63	104.9	56.7	11.7	11.4	106.5	105.5	57.3
35	47	104.9	56.4	12.6	11.4	106.6	105.5	57.5
36	41	108.5	60.2	13.4	13.4	106.8	105.4	57.8
37	25	103.1	53.0	11.9	10.4	107.0	105.4	58.0
38	14	108.1	60.7	13.2	10.9	107.2	105.4	58.2
39	17	108.6	59.9	10.3	13.1	107.4	105.3	58.5
total	2562	105.1	55.5	11.3	10.4			

TABLE 5. ANALYSIS OF VARIANCE OF BLOOD PRESSURE

	d.f.	s.s.	m.s.	f
(1)	(2)	(3)	(4)	(5)
systolic pressure				
first degree	1	1657.83	1657.83	13.05**
second degree	1	1234.74	1234.74	9.72**
third degree	1	559.75	559.75	4.41*
residual between ages	18	2033.72	112.98	0.89
within ages	2540	322678.24	127.04	
total	2561	328164.28		
diastolic pressure				
first degree	1	2911.02	2911.02	27.12**
second degree	1	180.77	180.77	1.68
residual between ages	19	2970.16	156.32	1.46
within ages	2540	272647.83	107.34	
total	2561	278709.78		

\* Significant at 5% level.

\*\* Significant at 1% level.

CORRELATION WITH HEIGHT AND WEIGHT

EXCESSIVE body weight is usually regarded as one of the factors likely to contribute toward abnormally high blood pressure. Studies of normal weight vary with height. It will therefore be interesting to know to what extent weight and height are related to blood pressure in normal healthy and active individuals. In Table 6 columns 3 to 6 we give for each age the coefficients of correlation of blood pressure with height and weight.

TABLE 6. CORRELATION OF BLOOD PRESSURE WITH HEIGHT AND WEIGHT FOR EACH AGE

age	N	height and systolic	height and diastolic	weight and systolic	weight and diastolic	systolic and diastolic	height and weight
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
18	34	0.4514	0.4487	0.4416	0.3703	0.8939	0.7480
19	63	-0.0767	0.1565	-0.0558	0.1621	0.7506	0.7325
20	120	0.0137	0.1103	0.0680	0.0681	0.8082	0.6311
21	175	0.0466	0.1515	0.0418	0.0682	0.8557	0.6140
22	195	-0.0472	0.0375	0.1190	0.1104	0.7824	0.5795
23	216	0.0338	0.0512	0.0585	-0.0026	0.8297	0.5967
24	171	0.1995	0.3375	0.2777	0.2768	0.8435	0.5030
25	219	-0.1312	0.0137	-0.0659	0.0052	0.8468	0.4131
26	159	0.0696	0.1657	0.1258	0.1103	0.8396	0.5013
27	157	-0.1460	-0.0491	0.1081	0.0671	0.8477	0.5613
28	172	0.1798	0.0663	0.0003	0.0061	0.8558	0.4373
29	176	-0.0002	0.0400	0.0088	0.0001	0.8700	0.4791
30	176	0.0001	0.0049	0.0007	0.0001	0.8766	0.4582
31	137	0.0340	0.1806	0.2093	0.2009	0.8004	0.4457
32	99	-0.0211	0.0411	0.1044	0.1225	0.8858	0.5614
33	87	0.0633	0.1633	0.2177	0.0996	0.7667	0.3216
34	63	0.0893	0.1178	0.0349	0.1004	0.8708	0.4502
35	47	0.1067	0.2961	0.2175	0.1102	0.8700	0.5480
36	41	0.0893	0.1764	0.1762	0.3678	0.8005	0.6037
37	25	0.0820	0.2442	0.3242	0.4758	0.9158	0.4589
38	14	-0.4228	-0.1419	-0.2204	-0.0760	0.8083	0.7049
39	17	0.1142	0.1875	0.0685	0.2184	0.9293	0.1495
total	2062	-0.0103	0.0740	0.0989	0.0927	0.8340	0.5065

It will be seen that with the exception of those at age 18 and one or two other ages most of the correlations of height and weight with blood pressure are small in magnitude. None of these at individual ages is statistically significant.

For the series as a whole the correlations with weight are significant as also the correlation between height and diastolic pressure. Further, it must be noted that out of the 22 correlations for individual ages between weight and systolic pressure only three are negative. This is significantly different from what should have been the number of negative values if these correlations were due to chance. Similar considerations apply also to the correlations between weight and diastolic pressure and between height and diastolic pressure.



It is, however, likely that the mixing up of different communities had an effect on the values of the correlation coefficient. In Table 7 we present the correlations separately for different communities.

TABLE 7. CORRELATION OF BLOOD PRESSURE WITH HEIGHT AND WEIGHT FOR EACH COMMUNITY

community	N	height and systolic	height and diastolic	weight and systolic	weight and diastolic	systolic and diastolic	height and weight
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alurs	173	-0.1006	-0.0595	0.1414	0.0584	0.7809	0.3767
Andhras	70	-0.1371	-0.0699	0.1286	0.0368	0.8482	0.4305
Assamese	98	-0.0132	-0.0322	-0.0167	-0.0097	0.9017	0.6999
Bengalees	106	-0.0145	-0.0486	0.1398	0.1432	0.8020	0.5485
Biharis	58	-0.2976	-0.1200	-0.0885	0.0179	0.8223	0.4359
Bihar Adibasis	44	0.0316	0.1219	0.0382	0.1010	0.8649	0.7153
Dogras	158	-0.0060	-0.0166	0.0468	0.0328	0.8140	0.5937
Garhwalis	98	0.0089	0.0197	-0.0596	-0.0097	0.8915	0.4404
Gorkhas	190	0.1029	0.1859	0.1261	0.1419	0.8893	0.6277
Gujars	99	0.0300	-0.0416	0.0180	-0.0674	0.9447	0.6426
Jats	75	-0.0685	-0.0645	0.1401	0.0338	0.8082	0.5018
Jammu and Kashmir							
Hindus	98	-0.0265	0.0061	0.1626	0.1323	0.8769	0.4716
Kumsonis	176	0.0961	0.0781	0.1355	0.0570	0.8823	0.6364
Mahars	100	0.0017	0.0493	0.0171	0.0337	0.8569	0.6570
Mahrathas	105	0.0272	-0.0563	0.1940	0.1340	0.8317	0.4652
Malayalee Hindus	96	-0.1134	-0.0818	-0.0255	-0.0434	0.8767	0.3731
Punjabis	60	0.0531	0.1530	0.2295	0.3124	0.8750	0.5275
Rajputs	203	0.0138	0.0600	0.1737	0.1845	0.7547	0.5853
Sikhs (M & R)	99	0.0098	0.0119	0.1818	0.1874	0.8999	0.3617
Sikhs (other)	104	0.0655	-0.0458	0.1457	0.2489	0.6700	0.5560
Syrian Christians	33	-0.0091	0.0879	-0.1977	-0.2220	0.8756	0.4693
Tamil Christians	41	0.1546	0.0753	0.0410	0.0040	0.9072	0.4551
Tamil Hindus	138	-0.0570	-0.0385	-0.0640	-0.1544	0.8734	0.4886
U.P. Hindus	56	0.2354	0.4669	0.0787	0.1765	0.9021	0.5622
U.P. Muslims	26	0.1239	0.0412	-0.0032	-0.1307	0.8579	0.6293
others	58	-0.3969	-0.4047	-0.0384	-0.0843	0.9198	0.6030
total	2562	-0.0103	0.0740	0.0989	0.0927	0.8340	0.5065

It can be seen from Table 7 that the positive and negative values observed at the individual ages could have arisen by chance even if there is no correlation between blood pressure and height or weight.

The correlations between systolic and diastolic pressure (column 7) and that between height and weight (column 8) are of the usual order of magnitude both in Table 6 and in Table 7.

#### FUNCTIONAL GROUPS IN THE ARMY

Soldiers of the Indian army belong to one or other of a certain number of 'arms' which are functional groupings each with a distinct role in operations. A soldier recruited into one arm remains a member of it throughout his career in the army except for inter-arm transfers which are very infrequent. These arms are open to enrolment for any citizen of India. However, it so happens that the distribution of the different communities among the arms is not uniform or random. Hence, it is

# FACTORS AFFECTING BLOOD PRESSURE OF INDIAN SOLDIERS

likely that communal differences may be reflected as part of the differences between the arms. Some part of the differences may also possibly be due to the nature of work and life in the different arms. In Table 8 we give the average blood pressure in the different arms, and also the average age, height and weight.

TABLE 8. MEAN BLOOD PRESSURE IN DIFFERENT ARMS, SHOWING ALSO MEAN AGE, HEIGHT AND WEIGHT

arms	number of soldiers	blood pressure in mm.		age (years)	height (cms)	weight (lbs)
		systolic	diastolic			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
artillery	502	102.6	55.3	27.1	168.5	128.2
signals	131	104.0	53.7	27.1	168.2	122.8
infantry	1017	106.1	54.9	26.0	166.5	127.8
ordnance	73	112.3	58.1	27.7	165.4	123.5
MDSC	87	114.9	64.3	29.9	167.8	126.1
guards	45	115.2	62.7	26.0	174.7	136.8
others	7	105.1	56.6	25.4	169.0	131.1
total	2062	106.1	56.5	26.5	167.6	129.9

It is evident from Table 8 that blood pressure as well as height and weight vary materially among the different arms. The range is 12.6 mm. in systolic pressure from 102.6 mm. in the Artillery to 115.2 in the Guards, and in diastolic pressure 10.6 mm. from 53.7 in the Signals to 64.3 in the MDSC. The range in height is 9.3 cms and in weight 13.3 lbs. These variations cannot be attributed to differences in age as the high values occur in association with low as well as high age.

In Table 9 we give the results of analysis of variance between and within arms for blood pressure as well as height and weight. "Other" arms having in all only 7 soldiers in our survey have been left out of these calculations.

TABLE 9. ANALYSIS OF VARIANCE WITHIN AND BETWEEN ARMS

character		total	within arms	between arms
(1)	(2)	(3)	(4)	(5)
	d.f.	2554	2549	5
systolic pressure (mm.)	s.s.	327525.4	306377.9	21147.5
	m.s.		120.1	4229.5
	ratio			35.2**
diastolic pressure (mm.)	s.s.	278048.6	265489.1	12559.5
	m.s.		104.1	2511.9
	ratio			24.1**
height (cms)	s.s.	93864.2	86042.3	7821.9
	m.s.		33.7	1564.4
	ratio			46.4**
weight (lbs)	s.s.	366682.4	360189.3	6493.1
	m.s.		141.3	1298.6
	ratio			9.2*

\* Significant at 5% level.

\*\* Significant at 1% level.

All the four variance ratios are significant. The apparent differences among arms in respect of blood pressure as well as height and weight cannot therefore be due to chance fluctuations.

Bureau of Education Research  
(S. C. E. R. I.)  
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## SOLDIERS FROM DIFFERENT STATES

In Table 10 we give mean values, separately for twelve pre-reorganisation States in India, as well as lumped figures for other States which have frequencies less than 25, and also for Nepal.

TABLE 10. MEAN VALUES BY STATES

state	N	blood pressure in mm.		age	height (cms)	weight (lbs)
		systolic	diastolic			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nepal	181	112.8	60.4	26.6	161.8	126.6
West Bengal	95	109.8	57.3	24.9	167.6	122.6
Jammu and Kashmir	142	108.9	57.7	27.2	169.0	126.4
Bihar	135	108.6	57.1	25.0	167.3	123.2
Punjab	483	107.6	59.0	26.4	170.3	128.2
Madhya Pradesh	27	106.2	53.3	25.3	166.4	122.4
PEPSU	105	106.0	58.9	26.4	171.1	127.9
Travancore-Cochin	77	103.1	54.9	28.6	167.1	122.3
Uttar Pradesh	510	102.8	53.3	26.2	166.9	126.6
Bombay	192	102.6	51.3	27.5	166.1	124.9
Rajasthan	155	101.3	55.7	26.2	170.7	127.6
Madras	298	100.6	52.2	27.8	167.2	124.2
Assam	106	99.9	49.8	24.5	161.9	123.0
other states	56	106.2	57.9	27.5	168.8	125.6
total	2562	105.1	55.5	26.5	167.6	125.9

It will be seen from Table 10 that blood pressure is lowest for Assamese and highest for Nepalese. The range of variation is 12.9 mm. for systolic pressure and 10.6

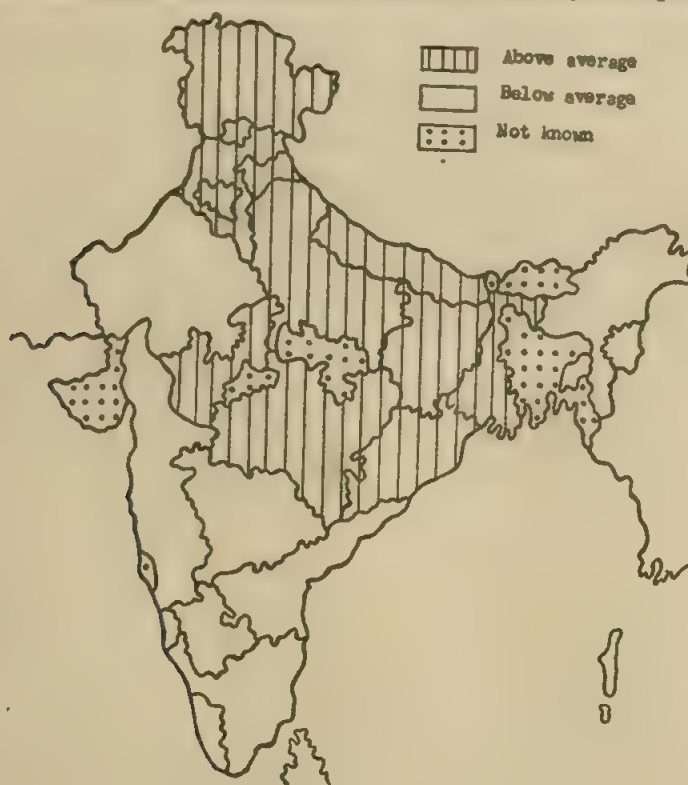


Figure 3. Regions of high and low systolic pressure.

## FACTORS AFFECTING BLOOD PRESSURE OF INDIAN SOLDIERS

men for diastolic pressure which are more or less the same is noticed among the areas Assam, Bombay, Madras and Travancore Cochin appear to be regions of low blood pressure while Nepal, West Bengal, Punjab, P.P.S.U., Jammu and Kashmir and Bihar are regions of high blood pressure. These regional differences are not dependent on age or other physical characteristics.

Looking at Figures 3 and 4 in which the map of India is sketched to distinguish regions of high and low blood pressure, it is difficult to resist the conclusion that there is a compact region of low blood pressure in the south of the sub-continent with a pocket of low also in Assam and that regions of higher blood pressure are in the North. (For Uttar Pradesh we have taken the value for Hindus only as there are no Muslims in our sample except from U.P.) Perhaps the explanation may be that the original inhabitants of this country were a people of low blood pressure who were driven south and east by invaders from the north west. Or it may be that the rice eaters of the South and East have lower blood pressure than wheat eaters. The high blood pressure of Bengal does not fit in with this theory. Uttar Pradesh and Madhya Pradesh are in the region of high systolic pressure and of low diastolic pressure. In Rajasthan the systolic pressure is low and the diastolic pressure high.

An analysis of variance to test the significance of the differences among States is given in Table 11. It is evident that the differences are highly significant in respect of blood pressure as well as in height and weight. •

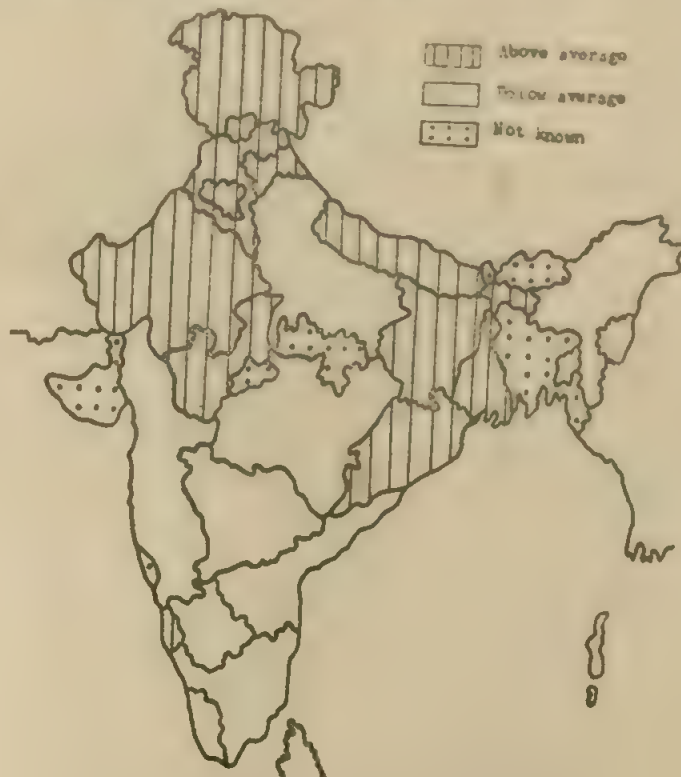


Figure 4. Regions of high and low diastolic pressure



TABLE 11. ANALYSIS OF VARIANCE WITHIN AND BETWEEN STATES

character		total	within states	between states
(1)	(2)	(3)	(4)	(5)
	d.f.	2561	2548	13
cystolic pressure (mm.)	s.s.	328164.3	292833.7	35330.6
	m.s.		114.3	2717.6
	ratio			23.8**
diastolic pressure (mm.)	s.s.	288709.8	252902.9	25806.9
	m.s.		99.2	1985.2
	ratio			20.0**
height (cms)	s.s.	94077.1	76878.7	17198.4
	m.s.		30.2	1323.0
	ratio			43.4**
weight (lbs)	s.s.	368651.9	350399.3	9352.6
	m.s.		141.0	711.7
	ratio			5.1**

\*\* Significant at 1% level.

#### COMMUNITIES

Of the many ways of classifying the Indian population none is perhaps more meaningful from the biological point of view than the grouping into communities. We use the term 'community' in a rather loose sense to denote any group that does not generally inter-marry with any other. This definition will, therefore, separate tribes, castes, religions and sometimes territorial groups. A very large number of such communities exist in India, but in Table 12 we have listed only those which are represented in our sample by not less than 25 individuals. These have been arranged in descending order of systolic blood pressure.

TABLE 12. MEAN VALUES BY COMMUNITIES

community	N	blood pressure in mm.		age in years	height in cms	weight in lbs
		systolic	diastolic			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gorkhas	190	113.0	60.6	26.5	161.8	126.6
Sikhs (Other)	104	111.3	64.5	26.3	173.8	136.5
Sikhs (M & R)	99	110.7	58.7	29.0	168.0	131.3
Punjabis	60	109.2	57.4	26.1	168.8	128.8
Bengalees	106	109.1	56.4	25.1	167.9	122.8
Jammu and Kashmir Hindus	98	108.9	56.2	27.2	168.4	126.6
Dogras	158	108.7	59.7	26.0	168.3	122.3
Bihar Adibasis	44	108.1	54.5	25.9	163.8	118.6
Biharis	58	108.0	56.4	23.5	170.7	127.1
Jats	75	106.8	58.6	25.0	172.3	128.4
U.P. Hindus	56	106.1	53.9	26.2	167.2	122.6
Mahars	100	105.1	53.1	26.7	164.1	121.4
Abirs	173	105.1	59.3	26.6	171.5	125.2
Malayalee Hindus	96	103.5	55.5	28.4	167.5	123.6
Garhwalis	98	103.1	51.1	27.1	162.9	124.2
Kumaonis	176	102.9	52.9	26.3	166.2	128.4
Andhras	70	101.7	52.1	28.2	166.4	125.6
Syrian Christians	33	101.5	53.2	27.9	166.9	122.7
Rajputs	203	100.8	57.1	24.2	170.0	125.3
Tamil Christians	41	100.5	51.1	27.5	168.8	122.0
Gujars	99	100.4	50.0	27.8	171.2	133.5
Mahrathas	105	100.2	49.3	27.9	167.4	126.9
Assamese	98	99.5	49.5	24.6	161.3	122.6
Tamil Hindus	138	98.9	51.1	27.5	167.3	122.7
U.P. Muslims	26	92.7	45.6	27.2	167.2	130.1
others	58	105.3	57.3	28.4	166.9	123.4
total	2562	105.1	55.5	26.5	167.6	125.9

## FACTORS AFFECTING BLOOD PRESSURE OF INDIAN SOLDIERS

Analysis of variance for testing the significance of differences between communities is given in Table 13.

TABLE 13 ANALYSIS OF VARIANCE WITHIN AND BETWEEN COMMUNITIES

character		total	within communities	between communities
(1)	(2)	(3)	(4)	(5)
	<i>d.f.</i>	2561	2536	25
systolic pressure (mm.)	<i>s.s.</i>	329164.3	377333.4	50830.9
	<i>m.s.</i>		109.3	2033.2
	ratio			18.6**
diastolic pressure (mm.)	<i>s.s.</i>	276709.8	234599.9	43109.9
	<i>m.s.</i>		92.9	1724.4
	ratio			18.6**
height (cms)	<i>s.s.</i>	94077.1	67110.8	36966.3
	<i>m.s.</i>		26.5	1078.7
	ratio			40.7**
weight (lbs)	<i>s.s.</i>	368651.9	32946.9	38705.0
	<i>m.s.</i>		131.0	1428.2
	ratio			10.9**

\*\* Significant at 1% level.

The differences between communities in respect of blood pressure as well as in physical characters are significant beyond any doubt.

### VEGETARIANISM

Some communities (especially orthodox Hindus) have religious objection to anything but vegetarian food. Others though not strictly vegetarian may not take mutton or beef or some other kind of meat. Some object to hens' eggs but may take ducks' eggs. Thus there are varying degrees of vegetarianism. The definition of a vegetarian adopted for the present survey was any person who does not eat meat and fish.

A comparison between vegetarians and non-vegetarians may in fact only reflect the effect of communal differences. In recent times more and more people are discarding the taboo against non-vegetarian food. Hence the communal nature of the dietary difference may be somewhat blurred now.

A comparison of mean values for vegetarians and non-vegetarians is given in Table 14.



TABLE 14. MEAN VALUES FOR VEGETARIANS AND NON-VEGETARIANS

character	vegetarians	non-vegetarians	test for difference
(1)	(3)	(3)	(4)
N	408	1910	
systolic pressure	108.5	105.2	*
diastolic pressure	56.8	55.1	**
age	26.2	26.9	*
height (cms)	169.7	166.7	**
weight (lbs)	126.0	125.8	

\* Significant at 5% level

\*\* Significant at 1% level.

For 244 of the soldiers diet was not recorded. Among the rest, the vegetarians form only about one sixth. In the general population the proportion of vegetarians must be much higher. Army life probably has an effect either in changing the food habits of vegetarians or in attracting more non-vegetarians than vegetarians for enrolment. It appears that vegetarians are taller, stouter and of higher blood pressure than non-vegetarians. The *t*-test shows that difference in weight is not significant, but height as well as blood pressure are significantly higher for vegetarians than for non-vegetarians.

#### MARITAL STATUS

Another question worth looking into is whether married persons are significantly different in blood pressure from unmarried persons. We have information about marital status for only 1255 of the soldiers in our sample. Of these 399 are single and 856 are married. Mean values for the two groups are given in Table 15.

TABLE 15. MEAN VALUES FOR MARRIED AND SINGLE PERSONS

character	married	single	test for difference
(1)	(2)	(3)	(4)
N	856	399	
systolic pressure	103.1	103.0	
diastolic pressure	51.8	52.0	
age	28.0	24.1	**
height (cms)	166.4	166.4	
weight (lbs)	126.0	124.1	**

\*\* Significant at 1% level

Apart from age the only significant difference is in weight. The married persons are slightly stouter than the unmarried. This can easily be due to the higher age of the married.

#### PULSE PRESSURE

The difference between the systolic and diastolic pressure is known as 'pulse pressure'. This gives some indication of the stress under which the heart is functioning and hence is considered to be of great value in assessing the soundness of the circulatory system. From Table 16 giving the distribution of pulse pressure, it can be seen that it ranges from 20 mm. to 70 mm.

# FACTORS AFFECTING BLOOD PRESSURE OF INDIAN SOLDIERS

TABLE 16. DISTRIBUTION OF PULSE PRESSURE.

pulse pressure in mm.	Frequency		Percentage		
1	2	3	4	5	
20	1	0.04	47	1	24.40
22	1	0.04	48	124	29.63
24	3	0.20	50	1102	72.64
26	2	0.27	51	1	72.64
28	10	0.66	52	88	76.11
30	26	1.68	53	2	76.19
32	3	1.80	54	239	83.52
34	22	2.65	55	4	83.68
35	1	2.69	56	112	90.05
36	22	3.55	58	51	92.04
38	24	4.49	60	172	96.73
40	193	12.02	62	2	96.87
42	38	13.51	64	9	99.22
44	131	18.62	66	7	99.49
45	2	18.74	68	8	99.69
46	144	24.36	70	8	100.00
total	2562				

The mean pulse pressure is 49.48 mm. and standard deviation 6.27 mm. Setting off two standard deviations on either side of the mean we get a range from 37 to 62 which may perhaps be taken as the limits below or above which one should look for abnormal conditions.

## CONCLUSIONS

The average blood pressure for the present sample of Indian soldiers comes out as 105.1 systolic and 55.5 diastolic. The variation in individual soldiers is from 75 to 154 systolic and from 30 to 94 diastolic, the standard deviations being 11.3 for systolic and 10.4 for diastolic. Averages in age groups vary from 101.4 and 52.7 at age 18 to 108.6 at age 39 for systolic and 60.7 at age 38 for diastolic. Averages for different States vary from 99.9 and 49.8 for Assam to 112.8 and 60.4 for Nepal. Among communities the average varies from 92.7 and 45.6 for U.P. Muslims to 113.0 and 60.6 for Gorkhas.

The average level of blood pressure revealed by the present data is much lower than the average used by medical practitioners in India. In *A Pocket Guide to Medical Life Assurance* by Jehangir J. Cursetji (1932) the averages given increase from 118 and 78 at age 20 to 127 and 86 at age 40. These figures, however relate to the 'insuring population' who come from a social stratum different in many ways from that of soldiers. The average blood pressure of more than 2000 inmates of prisons in Bengal (worked out at the Indian Statistical Institute in 1947) was 108.7 systolic and 71.1 diastolic. The present figures for Bengalees are 109.1 systolic and 56.4 diastolic. While there is good agreement between the two figures of systolic pressure, the level of diastolic pressure is much lower in the present sample than for the ISI sample. The reasons

may be either differences in techniques of measurement or perhaps something in army life which is conducive to lower diastolic pressure. To investigate this matter it is proposed to conduct another survey. Meanwhile it is recommended that the figures of diastolic pressure given in this paper may be treated with caution.

Ling (1936) gives figures for Chinese blood pressure. The averages vary from 111.4 and 72.4 at age 17 to 117.2 and 77.3 at age 37, which are higher than the present figures for India.

Robinson and Bruce (1939) give figures of blood pressure in the USA which also range from 118.3 and 68.2 at age 17 to 117.2 and 74.0 at age 37. Indian blood pressure is thus lower than the blood pressure of Americans and Chinese. The blood pressure of U. P. Muslims may possibly be among the lowest in the world.

There appears to be no correlation between systolic blood pressure and height, and the correlation, if any, between diastolic pressure and height must be small. Even between weight and blood pressure the correlation, though significant, is only of the order of 0.1 or less.

The lower blood pressure of non-vegetarians as compared to vegetarians may be considered surprising as it is generally held that a diet rich in proteins contributes to higher blood pressure. This lower blood pressure of non-vegetarians was observed also in the unpublished data relating to Bengalees referred to above.

Perhaps the most interesting result presented in this paper is the geographical distribution of high and low blood pressure in India. In the South of India there is a solid block of comparatively low blood pressure regions and in the North the blood pressure is generally higher. It will be interesting to investigate whether this is due to dietary, racial or climatic reasons.

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# A RESTATEMENT OF A SIMPLE PLANNING MODEL WITH SOME EXAMPLES FROM YUGOSLAV ECONOMY\*

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**SUMMARY** This paper presents a simplified model of the planning process. It is based on the assumption that the planning process is a continuous one, and that it is based on the use of the same data and comments on the Yugoslav economy.

## 1. INTRODUCTION

Planning is an extremely complex process which involves a number of stages. It is therefore desirable to disintegrate the process into a set of standardized techniques. In the present paper we shall be considering one possible technique which could be usefully applied in the introductory phase of drafting, say, a Five Year Plan.

In preparing the work on planning we are interested in getting an idea of the past performance of the economy and its future possibilities and for this purpose we shall attempt to draw a simplified picture of mutual relationships of the basic economic aggregates. Suppose that we are given the following set of data (the data are real and refer to the Yugoslav economy):

TABLE 1. ANNUAL RATES OF GROWTH IN PER CENT

	achievement <sup>1</sup> 1947-1956	targets 1957-1961
industry	9.0	12
agriculture <sup>2</sup>	1.1	5
gross social product	5.3	8
total consumption ( $GP - GI$ ) <sup>3</sup>	5.0	6

<sup>1</sup> Calculated as trend rates.

<sup>2</sup> Corrected for 4-year agricultural weather cycle, i.e., the first number of the series is computed as 1947-50 average and the last one as 1952-55 average. The figure for 1956 was not known at that time.

<sup>3</sup>  $GP$  = gross product,  $GI$  = gross investment.

\*The basic ideas and numerical results contained in this paper were first elaborated within a larger working programme in the Federal Planning Bureau, Belgrade in summer 1956. Afterwards the author continued to work on the problem with the results summarized in a talk given to the Staff Seminar in Economics at the Manchester University in May 1957. The present paper is a more rigorous restatement of that talk and contains also further elaborations. The author is indebted to Strahimir Popović, Dr. Vlado Stipetić, Professor Ely Devons and Dr. Kurt Martin for comments and helpful suggestions.

The figures denoted as 'targets' had already been established on some other considerations. Our task is to devise a simple model from which it would be possible to infer with the minimum expenditure of time whether 'targets' are broadly consistent with each other and with the past 'achievements', i.e., whether they are realizable, and what sort of consequences the realization of the targets might produce.

For answering the question as it has just been posed, or for devising the 'targets' themselves before they are known, we need a model which would be simple enough to be flexible (by which I mean an easy manipulation of changing assumptions), which would allow logical checks and would require only a minimum amount of computations. But it must be also realistic enough to produce some orientational figures which would serve as a guidance for further work.

The simplest possible model is certainly that which is based on a single structural coefficient. One is immediately reminded of the well-known Harrodian model whose single parameter is capital coefficient. Hence we may attempt to make use of this model. But in its original form Harrodian model will prove to be unsuitable for our purpose and we shall have to modify it as we proceed.

In what follows the disaggregation of the economy will be stopped at the level of six basic economic sectors (industry, agriculture, transport, commerce, building and crafts). It will be assumed that the achieved economic efficiency will at least be preserved in the next period. This also implies the assumption that no dramatic change will occur in the technology in the next few years. As we deal with a planned economy, we shall assume that capacity is "fully" utilized.

The discussion will serve three purposes. First, to build the model itself, and by doing so to clear up some misconceptions about the concept of capital coefficient, to define this concept rigorously, and also to provide statistical content for this concept. Secondly, to apply the model to the actual empirical data (post-war Yugoslav economy) in order to derive some practical results. Though, unfortunately, statistical series available (1947-1957) are very short and occasionally not particularly reliable, which will limit the usefulness of our results. The third purpose is to consider, by way of conclusion, possible generalizations concerning planning and economic growth.

Finally, in order to avoid any potential misunderstanding, I should like to make it clear that the model (technique) we are going to discuss is designed to serve a very narrowly defined purpose, that it represents no more than the first step in the introductory phase of planning and that there is a very long way to be passed before actual targets and an actual economic plan is worked out. It will also become apparent that even so simplified a task still involves considerable conceptual and statistical difficulties. And this is then one of the justifications for our enquiry, quite apart from the practical usefulness of the technique itself.

## ON A SIMPLE PLANNING MODEL

### 2. DEFINITIONS AND SYMBOLS

The concept of "gross social product" or "gross product" is defined as the aggregate of goods and services intensively connected with economic production (transport and trade services are included). The services of professions, administration, defence, etc., are not included.

Productive investment will mean investment causing the growth of gross product as defined above. Therefore expenditure on housing, hospitals, schools, etc., will be excluded from investment and will be included in "total consumption". Both modifications are done partly with regard to the data available and partly because I find so defined concepts to be more suitable for the analysis which follows.

The concept "technological capital coefficient" is intended to mean the relation between the value of productive fixed assets (with or without inventories) and the value of output produced by these assets in one year. Technological capital coefficient depends not only on pure technology, but also on the general organization of the economic process (including the changes due to aggregation) and the term "technological" is used in this wider connotation. In fact all this is traditionally intended to be implied by the concept "capital coefficient". However, as it will be shown presently, the traditional intention is often far from being realized in the traditional usage of the concept, either in model building or in empirical studies.

All growth rates are computed as trend growth rates, unless it is explicitly stated otherwise.

Symbols used and some further definitions are listed below.

- $P$  — product in general and not specified whether gross or net
- $GP$  — gross social product (services excluded)
- $GK$  — gross stock of capital (productive assets)
- $GI$  — gross investment (productive assets)
- $D$  — depreciation
- $R$  — replacement
- $Y$  — new social product or social income ( $Y = GP - R$ )
- $I$  — new investment ( $I = GI - R$ )
- $k$  — technological capital-output ratio (capital coefficient) average or marginal
- $k_m$  — marginal capital-output ratio implying an  $m$ -year lag between investment and the resulting increment in output
- $k_i$  — marginal instantaneous capital-output ratio
- $k_g$  — "gross" capital coefficient (ratio between gross investment and the increment in gross product)
- $k_n$  — "net" capital coefficient (ratio between net investment and the increment in net product)



$r$  — rate of growth  $\left(r = \frac{\Delta Y_t}{Y_{t-1}}\right)$

$r_c$  — concurrent rate of growth  $\left(r_c = \frac{\Delta Y_t}{Y_t}\right)$

$m$  — maturation period (time elapsed between investment and the resulting increment in output)

$n$  — depreciation period

$s$  — share of investment in product (equivalent to propensity to save)

$t$  — time.

### 3. MODEL.

Taking into account the quality of the available statistical data and the requirements listed in Section 1, the model should be of the simplest possible kind. As the Harroddian growth model seems to possess this characteristic, it has been chosen as the starting point. The basic structural coefficient of this model is capital output ratio. We must therefore start our inquiry by an examination of the properties of the capital coefficient.

The standard Harroddian model is derived in the following way:

$$sP = k_i \Delta P = k_i r_c P$$

which means that the necessary investment ( $sP$ ) is equal to the increment in product multiplied by the capital coefficient. Cancelling  $P$ 's the equation reduces to

$$s = k_i r_c. \quad \dots (3.1)$$

Capital coefficient in this relation is taken to be technologically given and constant. Thus if  $s$  is given  $r_c$  is determined and vice versa. In fact  $k_i$  does not represent the technological capital coefficient and therefore a series of modifications is needed to make the model usable.

Assume that investment in fixed assets today will cause an increase in output  $m$  years later. This relation is then expressed by

$$s_t P_t = k_m \Delta P_{t+m} = k_m r_{t+m} P_{t+m-1}.$$

Assume further that  $s$  and  $r$  do not change through time, bring all quantities to the same point of time and cancel  $P$ 's. The result is a modified Harroddian model.

$$s = k_m r (1+r)^{m-1}. \quad \dots (3.2)$$

Taking into account that  $r_c = r(1+r)^{-1}$ , capital coefficient in the standard model may be resolved into its two component parts: technological capital coefficient ( $k_m$ ) and the growth component.

$$k_i = k_m (1+r)^m. \quad \dots (3.3)$$

This shows that, even apart from the changes in technology and in the utilization of capacity, and even granted that investment and product entering the relation have

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been previously defined, and that we use the Harrodian  $I$ , and normally the different from the technological  $K$ , that constituting factors being the investment, defined with the rate of growth. Assuming for instance  $m = 4$  and  $r = 9$  percent, investment  $i_1$  will be 46 percent greater than the actual technological  $K_1$  of "Statistical Argentina".

Next assume that the rate of growth of output  $y_1$  differs from that of investment  $y_2$ , but that they are constant throughout the period. Share of investment will then change and at the time  $t$  it will be given by

$$e_t = \frac{I_t}{P_t} = \frac{I_0(1+r_0)^t}{P_0(1+r_1)^t} = e_0 \frac{(1+r_0)^t}{(1+r_1)^t} \quad \dots (3.4)$$

Now  $e_t$  cannot be estimated directly because  $e_0$  and  $r_1$  are not independent of each other. Similar considerations as applied in (3.2) lead to the following relation:

$$e_0 \doteq k_m r_1 \frac{(1+r_1)^{t-1}}{(1+r_0)^{t-1}} \quad \dots (3.5)$$

The relation holds only approximately because the initial assumption has by necessity been violated. If  $r_1 = r_0$  they cannot be kept constant both at the same time.

Inserting (3.5) into (3.4) we get

$$e_t \doteq k_m r_1 (1+r_1)^m \quad \dots (3.6)$$

The application of the last equation as well as of the equation (3.1) to the empirical material is shown in the Statistical Appendix Table 8 A 1.

It is worth noting one interesting characteristic of the relation (3.2). It shows, that investments with long maturation periods (hydroelectric dams, agricultural meliorations, etc.) influence the rate of growth much less adversely, i.e. apart from their possible influence on the lowering of capital coefficient, than it is usually assumed. Inserting some realistic figures into the relation (3.2) we get the following two sets of data for comparison:

$$s = 27\% \quad k_m = 2.5 \quad \text{then if } m = 3, \quad r = 9\% \quad \text{if } m = 4, \quad r = 8\frac{1}{2}\%$$

$$s = 27\% \quad m = 3 \quad \text{then if } k_m = 2.5 \quad r = 9\% \quad \text{if } k_m = 3.33 \quad r = 7\%$$

If maturation period is prolonged by  $\frac{1}{3}$  the rate of growth will diminish by  $\frac{1}{3}$  percent only. But if capital coefficient is increased by  $\frac{1}{3}$ , the fall of the rate of growth will be four times greater, i.e., 2 percent. Thus the primary concern of economic policy should be the improvement of the capital coefficient. Further, from the structure of the equation (3.2) it is evident that  $k_m$  and  $s$  are of equal weight in their influence on the rate of growth. Thus if forced investment creates such organizational and economic difficulties that the capital coefficient deteriorates more rapidly than the share of investment increases, the new rate of growth will be smaller than the already or the potentially achieved one.\*

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\*That is what seems to have happened in Yugoslavia during the first Five Year Plan and in the Soviet Union in the pre-war years. This line of analysis leads to the fascinating problem of the maximum rate of growth (optimum rate of investment) the investigation of which I cannot pursue here. See my "Optimum Rate of Investment", *Economic Journal*, 1958, pp.747-67.

## 4. MATURATION PERIOD

Investment planners in the Federal Planning Bureau had an idea that the average maturation period would lie somewhere between three and five years. More exact figure was not known. Trying various lags I found that the best correlation was obtained by taking  $m = 4$  years. In fact the scatter diagrams indicated that for the manufacturing and mining  $m$  might be slightly less and for the economy as a whole slightly more than 4. However, this hypothesis could not be verified because the statistical series was too short and also because social product statistics was not conducted quarterly but annually.

Now, it would be obviously unrealistic to assume that every act of investment will produce an increment in product exactly four years later. It will be much more realistic to think in term of averages. Some investments will mature earlier and the others later, and on the whole it may be taken that investment in this 4-year period will be functionally related to the increment in product in the next 4-year period. Therefore 4-year moving averages have been computed (see Statistical Appendix II). As it had been expected, the correlation coefficient improved markedly and assumed the value of 0.99 for industry (manufacturing and mining) and 0.93 for the economy as a whole.\*

With the 4-year maturation period the following values of the capital coefficients were found (computed on the gross basis i.e. gross investment against increment in gross product) :

	industry	whole economy
1947/50 : 1951/54	5.0	5.5
1948/51 : 1952/55	2.9	4.0
1949/52 : 1953/56	2.6	2.7
1950/53 : 1954/57	2.3	2.7

These coefficients appear to be far from constant which calls for an explanation. The spectacular improvement of the capital coefficients in the recent years may be attributed to the following three main factors :

(1) The most important impulse was given by the far reaching economic reorganization started in 1951-52. The managerial system with the rigid administrative central planning and control has been gradually replaced by a combination of workers' councils management plus global planning through market instruments plus some central decisions concerning major investment projects.

\*Lesser correlation for the economy as a whole is probably primarily due to the agricultural weather cycle. Oscillations of the agricultural output may be as great as 56 percent (year 1955 compared with year 1952). In this instance correlation coefficient is a very crude measure because only four estimates are available for calculation so far (planning was introduced in 1947). However, the correlation between investment and output improves so strikingly when we assume 4-year average maturation period—as against any other assumption—that there can be little doubt about appropriateness of this assumption.



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(2) The tempo of investment has been slowed down and the know-how has been gradually improving.

(3) Changes in the structure of investment have occurred: after the basic industrialization programme had been accomplished by the First Five Year Plan (1947-1952), relatively more was invested in extensions and relatively less in new factories. A survey made recently in Croatia shows that the capital productivity of extensions is about 50 percent greater.

All this shows that no simple extrapolation of trends is admissible. We may, perhaps, provisionally assume that the last capital coefficient will be preserved in the next 5-year period. It is highly probable that  $k$  will continue to improve but without a thorough analysis of all potential reserves one cannot say how much.

### 5. CAPITAL COEFFICIENTS

Capital coefficient has hitherto been used to express the relation between investment and increment in product in general. Now more precise definitions of these two quantities entering the relation will be given.

Technological capital coefficient, obviously, cannot mean the relation between net investment and the increment in net product because there is no technological relation between them. Net investment and output may even move in the opposite directions.\*

It is less obvious why gross investment—gross product relation is also conceptually false. This becomes evident when it is compared with the correct technological relation which may be derived from the following considerations.

There is certainly a technological relation between the productive capacity—expressed as the value of gross capital—and the output of goods and services—expressed as the value of gross product. This relation may be termed: average capital coefficient,  $k_{av} = \frac{GK}{GP}$ .

Similarly there is a relation between the additions to the productive capacity—additions to  $GK$ —and the additional output—increment in  $GP$ —which relation may be termed: marginal capital coefficient. Now, the addition to  $GK$  is obviously gross investment net of replacement ( $\Delta GK = GI - R = I$ ), marginal capital coefficient is therefore

$$k_{\text{marg}} = \frac{I}{\Delta GP}$$

and as  $\Sigma I = GK$  and  $\Sigma \Delta GP = GP$ ,  $k_{\text{marg}}$  is comparable with  $k_{av}$ .

However, the actual relation is a little more complex. Namely not the whole of  $GK$  is productive. Apart from the non-utilization of the capacity—this possibility

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\*For the exhaustive analysis of this phenomenon see my "Depreciation Multiplier," The Manchester School, 1958, pp. 136-59.

is not considered—investment in progress will be unproductive too. Therefore only active capital has to be included in  $GK$ , as it has been done in Table SA-3 of the Statistical Appendix.

Marginal coefficient poses a slightly different problem. New investment  $\Delta GK$  is obviously related to the increment in product  $m$  years later—only we are normally unable to measure this increment statistically. What we actually observe is  $GP$  reduced for the part of the output of scrapped fixed assets due to the fact that in a growing economy replacement in  $t$  will exceed replacement in  $t-m$ ; in other words we statistically measure  $\Delta GP = \Delta R \frac{1}{k_m}$ , where  $\Delta GP$  refers to the increment in the current year  $\Delta GP = GP_t - GP_{t-1}$ , while  $\Delta R$  means increase of  $R$  compared with an  $m$ -year earlier  $R = \Delta R = R_t - R_{t-m}$ . Alternatively, it may be said that the increment of output in the year  $t$  is due to new investment in the year  $t-m$  computed as gross investment in  $t-m$  minus replacement in  $t$ . Again, gross product and replacement may be measured statistically in the current year, but not replacement  $m$  years ahead. True, ex post we are always able to arrange our data in whichever way we like. But it will be certainly desirable to define all parts of the social product so that they may be simultaneously statistically measured. In particular, a meaningful concept of social income seems to be created by postulating: social income is that part of the gross product which, if consumed, will leave the productive capacity of the economy unchanged. In a non-declining economy social income will be equal to gross product **net of replacement**

$$Y_t = GP_t - R_t$$

where replacement represents the value of fixed assets scrapped in the current year. It would be, therefore, very fortunate if we could achieve conceptual uniformity and define new investment as

$$I_t = GI_t - R_t$$

and then use this concept in constructing, among other things, usable capital coefficients.

This is in fact possible. New investment can be used as a sufficiently good approximation in constructing capital coefficients, because the divergence between so defined and an ideal technological capital coefficient is not too great and, moreover, rapidly declines with the increase of the rate of growth. This divergence is, for instance,  $8\frac{1}{2}$  percent for  $r = 13\frac{1}{2}$  percent and only  $1\frac{1}{2}$  percent for  $r = 10$  percent (the divergence is further reduced when technical improvements are taken into consideration: see Mathematical Appendix I). Thus we have the happy result that in a rapidly growing economy, when precision in forecasting is particularly needed, capital coefficient based on statistically measurable new investment is being automatically rectified and approximates closely the ideal technological capital-output ratio.

Very often even the data of new investment as defined above will not be available. In this case an approximation is provided by using the data for gross investment instead.

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Let  $l$  be the rate of economic development,  $l$  and the amount  $I$  spent on investment in a unit of time be technology, based on public investment figures (Table 1).

$$\frac{dl}{dP} > \frac{dl}{dR} = \frac{I}{dP}$$

However, just as there is a good property of being a best value, the average cannot improve. It would be better if  $l$  and the more and it could be determined that  $l$  is based on net investment per unit of time. This again can be done (see Mathematical Appendix II). It was found that  $l$  is not a function of  $l$ , the same as  $l$ , and the correct one is  $l$  following procedure described by Section III. Now for a growing economy the following relationship holds good:

$$l_0 < l < l_1$$

The existence of limits allows that the range of the possible values of  $l$  be determined. The simplest approximation to the true value of  $l$ , when no additional data are available, consists in computing the arithmetic mean of the limits, which has been done in Table S.A.3 of the Statistical Appendix. The procedure may be varied whenever the true value of  $l$  not only changes, is important (e.g., 54), comparisons between the average and the marginal  $l$  between the  $l$  and different growth functions and between technological  $l$  of different countries.

### 6. THE CONCEPTS OF AUTONOMOUS AND HETERONOMOUS SECTORS OF THE ECONOMY

Once capital coefficients for industry, manufacturing and mining have been established, and once the targets for the growth of industry have been laid down, the total industrial investment is determined too. It would be desirable if from this we could deduce the behaviour of all other economic sectors. And this almost can be done. As it will be shown in a moment, there are only two autonomous sectors in the economy, sectors which act as prime movers of the economy's growth. They are industry and agriculture. All other sectors (transport, commerce and catering, crafts and building) are heteronomous, their development is determined by the development of autonomous sectors.

Accepting the targets for output, the forecast of the necessary amount of investment in industry was made by using the best and lowest gross and net marginal coefficients achieved\*. Net coefficient produced more favourable results than the

\* The following may exactly indicate the cause of the error without any assumption of probability. In summer 1956, when the numerical computations were made, the error was made by the use of FFB I, ventured to predict, using the formula,  $l = 1.08$  in 1956 and assuming a normal year, an increase in industrial production in 1957 by 21 percent with a possible addition of 1.4 percent downwards due to a statistical error in data in real terms. The official forecast, and later the plan for 1957, of the FFB indicated an increase of only 13 percent. FFB forecast is rarely 0.2 to 0.3 more than one or two percent, but this time the error was 4 percent, industrial output rose by 17 percent in 1957. However, although the actual result happened to be within the range I have expected, 17-21 percent, the retrospective analysis has convinced me that neither the forecast of more development. An average rate of industrial expansion in recent years was 13 percent and a sudden increase to 21 percent in 1957 would be a too great jump to pass without deteriorating capital coefficient. Similarly a somewhat decrease of the rate of growth in 1958 will have an improvement of  $l$  as its effect. In this way the economy tends to diminish great deviations from the regular growth pattern. Thus the forecast for 1957 and 1958 taken together (1956 = 100, 1958 = 128, the actual FFB plan is 129.9, *Bozha*, 21, XII, 1957), which is to be more accurate than for either taken separately. It remains to see whether this expectation will prove to be justified or not.



gross one and so an average between results on the net and on the gross basis was computed. The resulting annual figures were partly surprising and the main findings may be summed up as follows:

(1) Provided that there will be no further improvement in the capital coefficients, the target of an average rate of growth of 12 percent could be reached only by 1964, even if industrial investment increased annually at the rate of 30 percent.\*

(2) This is because first three or four years of the new Five Year Plan are predetermined by investments already made, and in the preceding three years the level of investment was relatively low. Thus it proves to be impossible to plan for five years only. And even with an expansion of investment at a rate of 30 percent per annum industrial output in the period 1957-1961 may be expected to grow at the rate of 10½ percent only.

(3) Changes in investment policy bring, with a lag, pronounced and dangerous oscillations into the system. So in 1957 an increase in industrial output of some 21 percent could be expected, but in the following two years the respective rates would be 5 percent and 4 percent only. And if 1958 and 1959 happen to be bad agricultural years with a fall in output of say 20-40 percent, the whole economy will be brought into a very difficult economic situation. But even in a more favourable case the violent changes in investment and output create all sorts of internal and external adjustment difficulties; they cause what is known as "economic waste."

However, all this on the assumption that  $k$  will not continue to improve. If it does, the oscillations will be partly compensated, the 1958 and 1959 rates of growth will be higher, though the rates of the last or of the last two years and of the whole next FYP after 1961 will be almost certainly lower. For we cannot expect to carry out a programme of 30 percent yearly increase in investment and *at the same time* to improve capital coefficient.

*Agriculture (with Forestry)* represents the second autonomous sector. The present organizational, political and economic characteristics of Yugoslav agriculture—and possibly of most agricultures in the world—prevent any simple analysis by means of capital coefficient. It may be said that the target rate of 5 percent is, under certain assumptions, realistic.

The first period of the Yugoslav post-war economic development (1947-1955) was an industrialization era. About 61½ percent (71.4 percent in 1952-55) of all productive net investment was diverted into manufacturing and mining. Only 12½ percent (7½ percent in 1952-55) of net investment went into agriculture. By 1956 the basic industries were already built; industry is now capable of supplying agriculture with all sorts of machinery and fertilizers; the focus of attention in the next FYP has been shifted to agricultural development with the intention of bringing it into line with industrial development. Net investment in agriculture is supposed to double by 1961 and various political and organizational measures have already been undertaken to create the climate favourable to a quick growth.

\* This was the Federal Planning Bureau's rate for 1957.

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For all these reasons I could only accept the figures supplied by agricultural experts and put them into my scheme. Ex post verification of the plan produced, assuming a lag of two years, a sensible capital coefficient of about 2.4 as against 3.9 in 1953; see Statistical Appendix III) which may be considered to be well in line with the downward trend in the whole economy (cf. Statistical Appendix III) and with the vast potential economic reserves which exist in Yugoslav agriculture.

With the targets for industry and agriculture given, the output of the heteronomous sectors is pretty well determined. But the relation between investment and output in these sectors, as a rule, is not as firm as in industry. It is a frequent mistake in economic policy to neglect investments in these sectors and to divert available resources into autonomous sectors where they are evidently and directly productive. The classical example is *transport*.

In Yugoslav economy there exists a very good correlation between the changes in industrial output and the corresponding changes in transport services, as the following statistical series will show.

	1947	1948	1949	1950	1951	1952	1953	1954	1955
gross product (index)									
industry	100	129	144	145	140	147	152	171	201
transport	100	133	154	165	164	140	162	171	196
gross investment (index)									
transport	100	216	143	172	238	126	147	167	167

The temporary divergencies in *GP* indices are probably caused primarily by fluctuations in passenger transport due to the fact that fares were lagging behind and these were suddenly increased. On the whole the figures suggest that it will be acceptable to assume that *GP* in transport will expand proportionally to *GP* in industry in the next five years.

However, there is no fixed short term relation between *GP* and investment. It seems reasonable to assume that in transport economies of scale are particularly operative. In this case investment will lag behind output. But in an underdeveloped economy transport has not only the derivative significance, it is partly autonomous as well: the development of transport facilities may provide a strong impetus to an overall acceleration of economic growth.\* Until a more detailed study of all these relationships is made, it will perhaps be admissible to assume, as a first approximation

\*Perhaps Mexico may be quoted as a suitable example. In the period 1939-1950 national income was rising at the rate of 7.2 percent per annum. In the same period the share of transport in total investment was 28 percent against 23 percent of industrial investment (H. F. Williamson, J. A. Buttrick (ed) *Economic Development*, New York, 1954, p. 543). The respective shares for Yugoslav economy in the period 1947-1955 were 14½ percent against 61½ percent (in total productive net investment) and the rate of growth was lower.

that the increase of transport investment will follow the expansion of transport *GP*. In this way resources will be made available to satisfy, at least partly, the autonomous function of transport as well. Compared with past development, this would suggest **relatively larger transport investment in the future.**

Similarly as agriculture in the post war period crafts were developing in an unfavourable economic climate. The analysis of statistical series would therefore, not be of much use. For the future it will be assumed that crafts *GP* will follow the total social *GP* and that the marginal capital coefficient will be kept constant, which means that investment in crafts will be expanding at the same rate as *GP*.

The statistical series of *commerce and catering* follows again a certain well-defined rules :

	1947	1948	1949	1950	1951	1952	1953	1954	1955
gross product (index)									
commerce and catering	100	118	122	116	107	114	120	133	146
total consumption( <i>GP-GI</i> )	100	110	119	106	106	100	123	128	155
gross investment (index)									
commerce and catering	100	48	64	58	71	21	84	94	114

The correlation between commercial services and total consumption (computed as gross social product net of gross productive investment) is evident. The short term investment is in no direct relation to the volume of services. In fact it reflects well the effects of administrative interventions : whenever investment resources proved to be insufficient (particularly in the poor year 1952), it was commerce and catering where the first and the most drastic cuts in investment plans were made. On the whole the share of commercial investment in total investment is not great (*cf.* Statistical Appendix IV) and so we may postulate the most convenient relation without committing a dangerous mistake. Thus constant capital coefficient will be assumed.

One will expect gross product of *construction* to be related to the total investment (productive and unproductive). If the year 1947 is dropped out, because there must have been made a mistake in statistical measurement, this hypothesis will be nicely verified.

	1948	1949	1950	1951	1952	1953	1954	1955
gross total investment	100	107	107	128	92	103	105	95
<i>GP</i> of construction	100	109	108	92	89	101	108	98

In our schema it will be assumed that the dynamics of total investment is equal to the dynamics of productive investment and that, therefore, construction *GP* follows the volume of productive investment. Similarly as in the case of commerce and catering the investment in fixed assets is relatively small, and so it may be determined on the assumption of constant capital coefficient.



## ON A SIMPLE PLANNING MODEL

### 7. THE FINAL RESULTS OF THE MODEL

Let us briefly sum up the work done so far. At the beginning the characteristics of the capital coefficient were thoroughly examined. Then the last and the most favourable marginal capital coefficient was selected and applied on the industrial gross investment increasing at the rate of 30 percent. In this way (with some corrections) industrial gross product was determined. Next agricultural gross product and gross investment were taken as given. Finally, relations between various heteronomous and autonomous sectors were examined. With these relations known and with the autonomous sectors given, the whole system is determined. This means that by solving simple equations we find the gross investment and gross product for every sector in every year (60 figures altogether). Applying some simple consideration concerning depreciation, a similar set of net figures will be established as well. The data necessary for the solution of the system are given in the Statistical Appendix, Table S.A. 4.1. In this way our task of constructing a simple model may be considered as accomplished.

However, it will be worth while going a little further and examine briefly the practicability of the first results and also discuss some possible theoretical generalizations.

Solving the system, the following indices will emerge for 1961

(1956=100)	
gross social product	153
gross productive investment	219*
total consumption	133

\* inventories excluded

Apparently, everything is in order. True, investment is very high, but consumption has risen considerably too. However, all this on assumption that capital coefficient, i.e. the general efficiency of investment, will not deteriorate. And can we assume that the general efficiency of investment will be unaffected in a situation where the annual rate of growth of investment is as high as 17 percent! This is not a theoretical but a practical question and in this particular case its most important aspects are the following three:

(1) What effect is forced investment likely to have on the balance of payment, *ceteris paribus*?—I do not know the precise answer though I am inclined to believe that in the near future foreign exchange will probably not be a bottleneck.

(2) Is there a possibility to train the sufficient number of engineers and technologists, skilled workers, technical and economic personnel capable of mastering, without a fall in efficiency, the industrial investment and afterwards the resulting production, if industrial investment, compared with the 1956 level, will increase 2.8 times by 1961? The answer is uncertain. At the beginning of the period, in 1957, the output of engineering graduates was only one half of the necessary number, and the number of skilled and highly skilled workers employed in factories was respectively only

80 percent and 50 percent of the number required. But it is also true that the productivity of labour is rapidly rising—by 22.7 percent for the period 1952-1957, by 8.7 percent in 1957—so that even a large increase in output may require only a modest increase in labour force.

(3) Does the existing and the potential personnel in the building industry and its organization allow an expansion of construction of more than two times in the period 1957-1961 without a fall in efficiency?—The shortage of skilled labour in this industry is notorious and so the answer is negative.

Taking all this into account, one would have to start changing the assumptions of the model until the right balance between the size of investment and the probable value of the capital coefficient is struck (cf. Section 3). The first step in this direction has been made in Table 2.

2. ANNUAL RATES OF GROWTH IN PERCENT FOR 1957-1961<sup>1</sup>

	targets	model	practicable
industry	12	10.4 (10.0)	8
agriculture	5	4.9 ( 4.8)	5
gross social product	8	8.8 ( 8.7)	7
total consumption	6	6.0 ( 5.8)	5½

The column denoted as “practicable” is actually my own very rough guess and represents targets for which there is no doubt whatever that they will be realized.

The next step is to analyse the potential reserves and to increase targets gradually. These reserves are great and, only conservatively estimated, the final results will lie between “Model” and “Practicable.” In this way they come very close to the figures of initial targets whose consistency we set out to examine in this study. If the procedure applied has been correct, then to say that the initial target for industry is either a little too optimistic<sup>2</sup>) or inconsistent with an equally high rate of growth after 1961—is a conclusion to be drawn from the analysis.

## 8. CONCLUSIONS

There are several interesting theoretical byproducts of the foregoing analysis which will be summed up in the form of conclusions.

(1) The popular and widely used Five Year Plans *as such* are not plans in a serious sense of the word. Due to considerable lags in economic process it is not possible to plan for five years only. If the investment maturation period is four years, as it appears to be in the Yugoslav economy, the total length of the period in consideration will be at least thirteen and not five years.

<sup>1</sup> The rates in parentheses are trend rates comparable to those from Table 1. Other rates are derived from ratios of last over first figures in the series.

<sup>2</sup> As I see now from the press reports (*Borba*, 4.XII.1957) in the final draft of the plan the target for industry was lowered to 11 percent. The target for agriculture was increased to 7.5 percent bringing thus the target for gross social product to 9.5 percent. In view of the spectacular increase in agricultural output in 1957 (27 percent over the last 5-year average), the revision of the agricultural rate of growth seems justified. Personal consumption is expected to rise at a rate of 6-7 percent per annum.

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(2) As far as I am aware there is no thorough discussion of the length of the planning period in the literature of the countries which practise economic planning. I suspect that 5-year period has come into such a wide use because of the pronounced Pythagorean propensities of modern planners: instead on the basis of a rational analysis they choose number five for it is contained exactly two times in the perfect number ten. Could not the length of the maturation period provide a rational basis for the solution of this problem?

(3) There is another widely spread irrational tendency in planning due to rigidly defined planning period and to the ignorance of the interdependences in economic process. Namely, the markedly highest relative and sometimes even absolute level of investment is planned for (or realized in) the fourth year with the intention to make the fifth and the last year of the plan a relaxation year, when the fruits of the hard work will be enjoyed.\* But in this way oscillations are artificially built into the system leading, not to relaxation, but only to troubles. Would it not be advisable to apply continual replanning, i.e., to plan every year with a 5-year (or rather,  $m$ -year) horizon?

(4) The structure of the model and the results quoted in Table 2 suggest that the popular contention that the underdeveloped countries lack material resources (investment funds) for their economic development is simply not true. If only foreign exchange problem can be solved, economy is capable of generating any amount of investment necessary for productive application. Only in a stationary or nearly stationary economy investment is an independent outside factor and growth is a function of investment. In a growing economy it is much more appropriate to think of (productive) investment as being a function of growth.

(5) Accordingly, the popular explanation of the low level of consumption by the high level of investment—this is the usual criticism of the Soviet pattern of economic growth—appears to be based on a static conception of the division of social product and as such has no ground. Table 2 shows that higher investment (indicated by the higher rate of growth of industrial output in "Model" as compared with "Practicable") may lead, and normally will lead, to higher total consumption. But higher total consumption does not necessarily mean higher personal consumption: all depends on provisions made for communal funds such as defence, education, health etc.

(6) Finally, granting that the social structure is favourable, the availability of skilled personnel or, more generally, the "know-how" is likely to be the real scarce factor in an underdeveloped country. Thus the speed of the social transformation and adaptation is the most important limitational factor of growth.

\* I observed this tendency in both Yugoslav Five Year Plans. And it is particularly clearly indicated in the two Soviet normal-time Five Year Plans, as the following indices of investment will show:

1933	100	1951	100
1934	131	1952	111
1935	154	1953	117
1936	211	1954	137
1937	187	1955	147

(Computed from "Narodnoe Hozjajstvo SSSR", Moskva 1956, pp. 153-159).



## APPENDICES

### Mathematical Appendix : I

#### MARGINAL CAPITAL COEFFICIENT BASED ON NEW INVESTMENT AND THE DEGREE OF ITS APPROXIMATION TO THE TRUE VALUE OF THE TECHNOLOGICAL CAPITAL COEFFICIENT

Consider a regularly growing economy where technology does not change, the productive capacity of once created fixed assets remains approximately constant, assets are scrapped always at the end of the year, the maturation period of every annual portion of investment is  $m$  years and its productive life another  $n$  years. The addition to the productive capacity at time  $t$  is given by

$$\Delta K_t = GI_{t-m} - R_{t-1}$$

where

$$R_{t-1} = GI_{t-n-m-1}$$

therefore

$$\Delta K_t = GI_{t-m} [1 - (1+r)^{-1-n}]. \quad \dots (1)$$

Similarly new investment in time  $t-m$  is given by

$$I_{t-m} = GI_{t-m} - R_{t-m} = GI_{t-m} - GI_{t-m-n-m} \quad \dots (2)$$

$$I_{t-m} = GI_{t-m} [1 - (1+r)^{-m-n}].$$

The ratio between the new investment and the actual addition to the productive capacity, i.e., the distortion of the capital coefficient, is then found to be

$$\delta = \frac{I_{t-m}}{\Delta K_t} = \frac{1 - (1+r)^{-m-n}}{1 - (1+r)^{-n-1}}. \quad \dots (3)$$

It is evident that the shorter the maturation period and the higher the rate of growth the smaller the distortion will be. Take two possible limiting cases. If the maturation period is  $m = 4$  and the depreciation period  $n = 30$  and if the rates of growth are respectively  $r_1 = 1\%$  and  $r_2 = 10\%$ , then the distortion coefficient will assume the following values

$$\delta_1 = 1.081$$

$$\delta_2 = 1.014$$

In other words, the numerator of the capital coefficient will be greater by 8.1% and 1.4% respectively if the value of the new investment at the time  $t-m$  is taken as an approximation for the true value of the increment of productive capital (productive capacity) in time  $t$ . Actual distortions are in fact, smaller because constant technological improvements reduce the influence of past investments which have to be replaced. Thus for high rates of growth we may safely neglect distortion of capital coefficient on this account.

### Mathematical Appendix : II

#### THE LIMITS FOR THE TECHNOLOGICAL CAPITAL COEFFICIENT

Consider a regularly growing economy and construct capital coefficients

$$k_n = \frac{GI-D}{\Delta GP - \Delta D}, \quad k = \frac{GI-R}{\Delta GP}, \quad k_g = \frac{GI}{\Delta GP}.$$

The coefficient  $k_g$  is evidently always greater than  $k$ . The relation of  $k_n$  to  $k$  is not evident. Assume  $k_n < k$

$$\frac{GI-D}{\Delta GP - \Delta D} < \frac{GI-R}{\Delta GP}$$

$$\Delta GP \cdot GI - \Delta GP \cdot D < \Delta GP \cdot GI - \Delta GP \cdot R - \Delta D \cdot GI + \Delta D \cdot R \quad | : D$$

$$-\Delta GP < -\frac{R}{D} \Delta GP - \frac{\Delta D}{D} GI + \frac{\Delta D}{D} R.$$

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Recalling (1) we easily find that in a regularly growing economy with no technological changes and with productive capacity of fixed assets approximately constant throughout their lifetime, the ratio of replacement to depreciation is equal to

$$\frac{R}{D} = \frac{R_t}{\frac{1}{n} K_{t-n}} = \frac{OI_{t-n-m}}{\frac{1}{n} \sum_{t-n-m}^{t-m} OI} = \frac{\alpha r}{(1+r)^n - 1} \quad \dots (4)$$

Putting  $\frac{R}{D} = \alpha$  and noting that in an economy with the constant rate of growth  $\frac{\Delta D}{D} = r$ , we get

$$\Delta GP(\alpha - 1) < r(E - GI) : -\Delta GP$$

$$\frac{1 - \alpha}{r} > k. \quad \dots (5)$$

As  $k$  is an empirical quantity with some range of possible values independent of  $r$ , the validity of this inequality cannot be decided *a priori*. But  $\frac{1 - \alpha}{r}$  is a decreasing function of  $r$  and by trying various rates of growth we find

$$\text{for } r = 1 \% \quad \frac{1 - \alpha}{r} = 13.8 > k$$

$$\text{for } r = 10 \% \quad \frac{1 - \alpha}{r} = 8.2 > k.$$

Thus for economically possible rates of growth and feasible values of  $k$  the relation holds good.

The simplifying assumption, that the productive capacity of fixed assets remains approximately constant throughout their life-time is not indispensable. It is sometimes believed that it is more realistic to assume that the capacity declines. If this is true the new  $\alpha'$  will be smaller than the hitherto used  $\alpha$  because depreciation is then concentrated in the early days of the productive life of the fixed asset and increases relatively to replacement.\* Now, if  $\alpha' < \alpha$  the relation (5) holds good *a fortiori*.

In this way it has been established that in a growing economy  $k_n$  and  $k_g$  represent two limits for  $k$

$$k_n < k < k_g. \quad \dots (6)$$

And this result may render valuable services in statistical investigations.

\* For systematic discussion of this phenomenon see my *Depreciation Multiplier*, Manchester, School, 1958, pp. 151-53.

### Statistical Appendix : I

TABLE S.A. 1.1. EMPIRICAL VALUES FOR THE MODEL\*

	model	
	1944-55 <sup>1</sup>	1957-61
annual rate of growth of <i>QI</i> <sup>2</sup>		
normal ( $r_2$ ) <sup>3</sup>	6.24	8.67
concurrent $\left( r_2 = \frac{r}{1+r} \right)$	5.95	8.00
ratio between <i>QI</i> and the increment of <i>GP</i>		
technological ( $k_2$ )	..	2.40
instantaneous ( $k_1$ ): empirical	4.13	3.54
theoretical <sup>4</sup>	..	3.40
empirical and theoretical share of <i>QI</i> in <i>GP</i> <sup>5</sup>	24.6	28.3

### Statistical Appendix : II

TABLE S.A. 2.1. GROSS MARGINAL CAPITAL OUTPUT RATIOS WITH THE MATURATION PERIOD OF FOUR YEARS

<i>QI</i> : 1 year average	1947-50	1948-51	1949-52	1950-53
<i>GP</i> : 4 year average	1951-54	1952-55	1953-56	1954-57
manufacturing and mining				
gross investment <sup>6</sup> mrd din	106	141	166	180
increment in <i>GP</i> (mrd din)	21	49	63	77
capital coefficient ( $k_2$ )	5.0	2.9	2.6	2.3
the whole economy				
productive <i>QI</i> (mrd din) <sup>7</sup>	220	273	282	292
increment in <i>GP</i> (mrd din)	40	69	106	108
capital coefficient ( $k_2$ )	5.5	4.0	2.7	2.7

\* All values are expressed in 1952 prices.

<sup>1</sup> Not corrected for agricultural fluctuations.

<sup>2</sup>  $r$  is trend rate of growth; also  $r_2$ .

<sup>3</sup>  $r = k_1/r_2 \pm k_1(1+r_2)^m$  according to the formula 3.6 in the text;

$r_2 = 9.1\%$  for the period 1953-1961

$k_1 = k_2(1+r_2)^4 = 3.40$ .

Instantaneous  $k_1$  or alternatively, technological  $k_m$  may also be derived directly in the following way :

$$k_1 = \frac{\sum_{t=1}^t I}{\Delta P}, k_m = \frac{\sum_{t=1}^{t-m} I}{\Delta P}, r_2 \text{ is constant for the period } 1-m \text{ to } t$$

$$\frac{k_1}{k_m} = \frac{\sum_{t=1}^t I}{\sum_{t=1}^{t-m} I} = (1+r_2)^m, \therefore k_1 = k_m (1+r_2)^m.$$

<sup>4</sup>  $e = k_1 r_2$ , e.g.,  $24.6 = 4.13 \times 5.95$ .

<sup>5</sup> The 1957 figures included are computed according to the forecast of the Federal Planning Bureau for this year.

<sup>6</sup> Investment in inventories is not included: mrd din means milliard dinars.



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## Statistical Appendix : III

TABLE AA 21. AVERAGE AND GROSS AND NET MARGINAL CAPITAL COEFFICIENTS

	Actual 1953	Average capital coefficient			Gross and net marginal capital coefficients		
		1953	gross	net	gross	net	average
economy	2,006 <sup>a</sup>	1,123 <sup>b</sup>	3.2	3.73	2.64	3.1	2.7
industry	963 <sup>c</sup>	465 <sup>d</sup>	2.1	3.1	2.3	2.7	2.3
agriculture :							
actual prices	1,293 <sup>e</sup>	354 <sup>f</sup>	3.9				
economic prices <sup>g</sup>	1,293 <sup>e</sup>	501 <sup>h</sup>	2.6				

<sup>a</sup>Based on the average price money wage, the value of final output of the economy is 2,006 mrd din, i.e. the average level of the economy (not that this is estimated in the case of 1953 but using prices of 1953 as an atypical year).

<sup>b</sup>Net of investment in progress, i.e. gross fixed assets in production have not included.

<sup>c</sup>Another estimate is obtained by subtracting the constant value of the marginal capital coefficient and then to divide the result again with the average coefficient to give the final figure of 2.1.

<sup>d</sup>The figure is estimated in the following way. From the value of the investment fixed assets in the economy (value of the economy multiplied by 0.14) in 1953 the figure of 1,000 mrd din is subtracted. Next 1,100 mrd din of a state-owned enterprise in the private sector of the economy is an estimate of Dr. V. Stancu who has kindly done it for me. Finally 340 mrd din of investment in agriculture and increasing assets of the privately owned estate are not included because I could not obtain reliable estimates.

<sup>e</sup>Adjusted for the deviation from the 1952-55 average, 1,642 mrd din is subtracted from the actual gross product in 1953.

<sup>f</sup>Inventories are not included because their value is not known to me.

<sup>g</sup>Purchase tax in value of 26 mrd din is excluded.

<sup>h</sup>In agricultural productive capital the value of houses is included because in a peasant agriculture houses are at the same time living stock and farm buildings. Thus agricultural capital coefficient is not strictly comparable with the industrial one. Perhaps it is some adjustments are needed. In 1952 the cost of a new flat in town plus the purchasing communal investment amounted to about two of the average investment endowment per working power in industry. But not all workers live in modern flats and in many families not only one member is working. Still it suffices to add only a fraction of 6.5 to arrive at an industrial capital coefficient which, with compare unfavourably with the agricultural capital coefficient.

<sup>i</sup>To avoid great taxation of the privately owned agriculture, the main burden of accumulation is shifted to industry. Accordingly, industrial prices are relatively high, even after purchase tax has been subtracted, or alternatively, agricultural prices are relatively low and are kept low by subsidized import. Judging from the relation of industrial and agricultural export prices I made a very rough guess that agricultural output, expressed in prices comparable with industrial prices, may perhaps be some 30% greater. And in this way the figure 501 mrd din was derived.

## Statistical Appendix : IV

TABLE S.A. 4.1. DATA FOR THE SOLUTION OF THE SYSTEM :  
DEVELOPMENT OF AUTONOMOUS SECTORS

	industry		agriculture and forestry	
	GP	GI <sup>1</sup>	GP	GI
1955	100	100	100	100
1956	109	86	90	103
1957	131	111	96	107
1958	140	133	99	119
1959	147	158	103	135
1960	165	191	108	148
1961	178	240	113	155

<sup>1</sup>GI is growing at less than 30% per year since 1956—which was the original assumption—because afterwards the assumption of an annual improvement of the capital productivity by 1% was introduced.

TABLE S.A. 4.2. THE STRUCTURE OF GROSS SOCIAL PRODUCT  
AND OF GROSS INVESTMENT IN 1955<sup>2</sup>

	GP	GI
industry	42.7	51.1
agriculture and forestry	31.4	17.2
transport	7.5	20.0
commerce and catering	8.5	5.5
crafts	4.7	2.0
construction	5.2	4.2
total	100.0	100.0

<sup>2</sup>1955 figures are taken because 1956 figures have not been available to me. In fact, a structure derived from suitably defined trend values would provide a more correct basis for the system.

TABLE S.A. 4.3. THE SHARE OF GROSS INVESTMENT  
IN GROSS SOCIAL PRODUCT<sup>3</sup>

1955	$s = 25.2\%$
1956	$s = 22.4\%$

<sup>3</sup>Inventory investment is not included.

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# ON A METHOD FOR ESTIMATING COST OF ARRANGEMENTS FOR SERVICING OF TRACTORS AND INCLUSION OF THIS COST IN THE INITIAL PURCHASE PRICE

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**SUMMARY.** In this paper a method has been developed for estimating the cost of arrangements for after-sale service and repairs of tractors. It has been shown that adequate mathematical basis can exist for working out the cost of proper arrangements and to work out relevant formulae. In its present form, the formulae developed in this paper involve certain functions whose numerical values have to be derived from actual experience. From similarity of the problems in the case of a machine going out of order and those encountered in human sickness and mortality experience, an attempt has been made to apply actuarial principles to apparently non-actuarial fields.

## 1. INTRODUCTION

In India the use of tractors for the performance of various agricultural operations, though still in its infancy, has, of late, shown signs of large potentialities for expansion. There are clear indications that the number of tractors on Indian farms can greatly increase if adequate and regular servicing arrangements are available in each district or a group of districts.

The main difficulty at present experienced by tractor owners is the non-availability of proper repairing arrangements in the neighbourhood, with the result that in the event of failure, not only the tractors remain idle but it becomes very difficult for alternative arrangements being made in time for performing the relevant operations for which the tractor was being used. Further, in present conditions it takes long time before the repairs are done at site; also, repairs cost a considerable amount which includes travelling and other expenses of the mechanic besides the direct cost of repairs and servicing.

Experience in foreign countries shows that the availability of satisfactory arrangements for servicing and repairs lead to a much larger demand for tractors for use on farms. An indispensable condition for the expansion of use of tractors for agricultural operations in India is, therefore, the setting-up of an extensive network of tractor servicing and repair stations. The setting-up of one such station will, no doubt, take into account a number of economic factors particularly the number of tractors in the surrounding regions which the station will be expected to serve. The experience in foreign countries also indicates that periodical servicing prolongs the life of a tractor, greatly promotes its efficiency and considerably reduces the loss of working hours on account of breakdown.

## 2. A THEORETICAL MODEL FOR ESTIMATING COST OF SERVICING AND REPAIRING ARRANGEMENTS

A theoretical model has been prepared for estimating the cost of after-sale service and repairing arrangements on principles analogous to those encountered in actuarial work. Clearly the cost of such arrangements will have to be included in the initial sale price but the inclusion of this cost as a lump-sum amount may push up the total price to be paid at the



time of purchase to a high figure and may thereby even result in reduced sales. To get over this difficulty, this element of the cost may be paid in convenient monthly or periodical instalments spread over a certain stipulated period. The terms of sale of a tractor may provide arrangements for after-sale service and repairs and replacement option (subject to certain conditions regarding company discretion) in the following manner :

(a) Routine check-up and oiling service arrangements at regular  $\frac{1}{k}$  th yearly intervals, during the entire working life-time of the tractor. (b) Repairs, as and when they arise, with replacement of certain specified parts without any extra charge (the replacement of parts other than those specified will be subject to payment). (c) In the course of time, essential parts (to be specified) of the tractor wear away, at which stage final breakdown occurs and the responsibility of the company for further service and repairs ceases. The final breakdown may be assumed to commence from age  $n$  after which a rate of decrement operates corresponding to the death rate in a mortality table. It is also assumed that there is a limit to the useful working life-time of a tractor say,  $n+m$  years. (d) Provision for the replacement of a 'normal' tractor after a certain minimum age, subject to company reserving to itself the right to assess the value that it would refund on surrender for the future cost of servicing etc.

(i) Let the average cost of each visit for routine servicing be Rs.  $C$ ; (ii) the number of visits for repairs be  $z_t$  in the year of age  $t$  to  $t+1$ ; (iii) the average cost per visit for repairs in the year of age  $t$  to  $t+1$  be  $C_t$ . This function is being introduced to provide for the likely progression of this cost function in a steadily increasing manner with age.

Obviously, the cost of repairs (or routine service) will be associated with the type of soil, the distance from central repairing station and some other relevant factors which will influence cost per visit. It will theoretically be possible to work out the charge for each narrow range of values of each of the above variable factors. In practice, however, it will hardly be feasible. Besides, the principle of averaging is fundamental to all problems of insurance and the normal ranges should cover the majority of cases unless the totality of cases can be divided into few well-defined broad categories. From the point of the development of business and on practical grounds, it seems obviously desirable that variations within a certain range in the relevant factors should be accepted as a normal feature and a uniform levy charged.

Special calculations may be made for the values of these factors outside the normal range; or if the number of such outlying values is not large, extra charge may be made on *ad hoc* basis. It will also be possible to make separate calculations for different crops in defined regions; in fact this procedure will automatically take into account the question of soil and the nature of agricultural operations which are associated with the particular crops. Whatever method is followed, the value for  $C$  and  $C_t$  (for all values of  $t$ ) will be assumed to be available.

The availability of the following data is presumed in subsequent calculations :

(i) Starting with radix  $l_0$  where  $l_0$  denotes the number of tractors of precise age '0', the mortality table for tractors showing the rates of decrement upto age  $n+m$  indicating columns  $l_t$ ,  $q_t$  and  $d_t$  for all ages of  $t$  from 0 to  $n+m$ . It may be understood that  $q_t$ 's and  $d_t$ 's upto age  $n-1$  will be 0 and  $l_t$ 's upto age  $n$  will all be equal to  $l_0$ .

# ESTIMATING COST OF ARRANGEMENT FOR SERVICING TRACTORS

(ii) For each year of age, the average rate (per tractor) of repairs,  $z_t$  together with the cost functions  $C_t$  (the cost per unit visit for repairs including replacement of specified parts) in the year of age  $t$  to  $t+1$ .

(iii) The value  $C$  representing the cost per visit for routine servicing.

(iv) The rate of interest  $i$  to be used in the calculations. On the basis of the above data, the following schedule can be constructed.

age $x$	$l_x$	$q_x$	$d_x$	$z_x$	$C_x$	$z_x \cdot C_x$	$z_x C_x + kC$	$e_x^0$ where $e = 1/(1+i)$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
0								
1								
2								
...								
$n$								
...								
$n+m$								

With the basic data in the Schedule, the following commutation columns may be constructed based on the under-mentioned formulae and definitions :-

$$D_x = v^x \cdot l_x \quad \dots (2.1)$$

$$\bar{D}_x = \int_0^1 v^{x+t} l_{x+t} dt \doteq D_{x+1} \doteq \frac{1}{2} (D_x + D_{x+1}) \quad \dots (2.2)$$

$$H_x = \bar{D}_x (z_x \cdot C_x + kC) \quad \dots (2.3)$$

$$K_x = \sum_x^{n+m} H_x \quad \dots (2.4)$$

age $x$	$D_x = v^x \cdot l_x$	$\bar{D}_x = \frac{1}{2}(D_x + D_{x+1})$	$H_x = \bar{D}_x (z_x \cdot C_x + kC)$	$K_x = \sum_x^{n+m} H_x$	$e_x^0 = \frac{\sum_x^{n+m} l_x}{l_x} + \frac{1}{2}$
(1)	(2)	(3)	(4)	(5)	(6)
0					
1					
...					
$n+m$					

I. Value at purchase of the cost of service and repair arrangements in the year of age  $x$  to  $x+1$

$$= \frac{1}{l_0} \int_x^{x+1} v^t l_t (z_t C_t + kC) dt = \frac{H_x}{l_0} \quad \dots (2.5)$$

$\therefore$  Value at purchase of the total cost of service and repair arrangements throughout the working life-time of the tractor

$$= \frac{1}{l_0} \sum_0^{n+m} H_x = \frac{K_0}{l_0} \quad \dots (2.6)$$

Therefore if the total cost of service and repair arrangements is to be paid at the time of purchase, the total amount to be paid will be

$$P + \frac{K_0}{l_0} \quad \dots (2.7)$$

where  $P$  is the present 'basic price' of the tractor exclusive of any charge for service etc.

Instead of  $\frac{K_0}{l_0}$  being paid in one lump sum at the time of purchase, it may be paid in monthly instalments spread over  $s$  years; in that case the monthly payment will be

$$\frac{1}{12} \frac{K_0}{l_0} \frac{1}{a_i^{(12)}} \quad \dots (2.8)$$

where  $a_i^{(12)}$  represents the present value of an annuity due of 1 per annum payable monthly for  $s$  years ( $s < n$ ).

Thus the total price for the tractor inclusive of the cost of servicing etc. arrangements will be payable as follows :

(a)  $P + \frac{1}{12} \frac{K_0}{l_0} \frac{1}{a_i^{(12)}}$  at the time of purchase; and

(b)  $\frac{1}{12} \frac{K_0}{l_0} \frac{1}{a_i^{(12)}}$  payable monthly thereafter for  $(s - \frac{1}{12})$  years.

### 3. METHOD OF CALCULATING CRITICAL AGE

It is likely that as the age of the tractor advances, the number of repairs ( $z_t$ ) per year will increase as also the cost per repair ( $C_t$ ). Further both  $z_t$  and  $C_t$  are likely to increase at a steadily increasing rate. This behaviour of  $z_t$  and  $C_t$  may indicate that it will be more economical after a certain 'critical' age to give up the use of the tractor. From the point of reducing the extra charge for repairs and servicing added to basic price the company may prefer to undertake to guarantee above arrangements upto this critical age only. This critical age may be calculated in the following manner :

*Method 1 :* Consider the function

$$F(t) = \frac{P + \frac{K_0 - K_t}{l_0} - S.v^t}{t} \quad \dots (3.1)$$

where  $S$  is the value of the tractor as scrap. It will be seen that  $F(t)$  denotes the aggregate cost of one year of working life of a tractor at the time of purchase if the intention is to use the tractor for  $t$  years and thereafter to dispose it of as scrap. Obviously this function  $F(t)$  will decrease steadily to a minimum value at  $t = T$  and again increase thereafter. This point  $t = T$  represents the critical point at which it would be more economical to dispose of the tractor as scrap rather than to continue to use it.

At this point therefore  $\frac{d}{dt} F(t)$  will be equal to zero. Now

$$t l_0 F(t) = l_0 P + (K_0 - K_t) - S l_0 v^t.$$

Differentiating and simplifying, we get

$$-t \cdot l_0 F'(t) = K_t + S \cdot l_0 \log v \cdot v^t + l_0 F(t).$$

But

$$F'(T) = 0$$

$$\therefore K_T + S \cdot l_0 \cdot \log v \cdot v^T + l_0 F(T) = 0.$$



## ESTIMATING COST OF ARRANGEMENT FOR SERVICING TRACTORS

This method considers the position regarding the cost of one year of working of a tractor and gives the required critical value based upon the basic price at the time of purchase. This critical value therefore serves as a guide for the Company which may restrict its guarantee for service and repairs, (without extra charge) to this critical age only.

*Method 2.* Now let us consider the position of a tractor owner having a tractor aged  $x$ . The present 'basic' price  $P'$  at which a new tractor can now be purchased may be different from  $P$ , the basic price at which he purchased the present tractor. For him therefore, the choice as to whether he should continue to use the old tractor or purchase a new tractor will have to take into account the current basic price at which a new tractor can be had.

Consider the function

$$F(x) = \frac{P' + \frac{K_0 - K_x - S}{l_0}}{e_0^0} \quad \dots (3.2)$$

where  $P'$  is the current basic price and  $e_0^0$  is the average complete working life of a new tractor. Consider the position in respect of a tractor when it is  $x$  years old and is 'normally alive' at the time. Now  $\frac{K_x}{D_x}$  is the value at present time of the cost of servicing etc. after age  $x$  in respect of such a tractor so that if an option is offered that a holder of a 'normally alive' tractor can at age  $x$  surrender the old tractor and obtain a new one at the reduced price, then the reduced price of a new tractor by replacement of the older one will be

$$P' - \frac{K_0 - K_x - S}{l_0} \quad \dots (3.3)$$

or the numerator of  $F(x)$  in (3.2) above.

To obviate the possibility of a selection being exercised against the Company, the Company may reserve to itself the right to assess the value it would refund for the future cost of servicing etc. depending upon the present condition of the tractor and the past experience of its working. For the present discussion, however, we have assumed that the tractor in question is a 'normal' one for its age and that the Company is prepared to allow the unspent cost on future services represented by  $K_x/D_x$ .

Now  $e_0^0$  is the average complete working life-time of a new tractor so that  $F(x)$  represents the cost of one year of working life of a tractor in the circumstances above.

Or else, the holder of a tractor of age  $x$  may continue to use the tractor. In that case, the average cost of future one year of working life-time will be

$$G(x) = \frac{\frac{K_x - S(1 - v_x^0)}{D_x}}{e_x^0} \text{ appl.} \quad \dots (3.4)$$

It will be observed that

$$\left. \begin{aligned} F(x) &\geq G(x) & \text{for } 0 \leq x \leq T \\ F(x) &< G(x) & \text{for } x > T \end{aligned} \right\} \quad \dots (3.5)$$

and

$x = T$  will thus be the turning point at which the ratio  $\frac{F(x)}{G(x)}$  becomes less than 1 or

$$\log \frac{F(x)}{G(x)} \text{ changes from } +ve \text{ to } -ve \quad \dots (3.6)$$

$$\text{i.e. } \log \left\{ \frac{P' + \frac{K_0 - K_x}{l_0} - \frac{K_x}{D_x} - S}{\frac{K_x}{D_x} - S(1 - v_x^0)} \times \frac{e_x^0}{e_x^0} \right\} \text{ changes from } +ve \text{ to } -ve.$$

We thus see that  $\log \frac{F(x)}{G(x)}$  is positive or zero for values of  $x \leq T$  but for  $x > T$ , it becomes negative. This point  $x = T$  is the critical point at which it is more economical to have the old tractor replaced by a new one on the conditions specified rather than to continue to use the old tractor.

#### 4. MODIFIED CONDITIONS OF GUARANTEED PERIOD OF SERVICE AND REPAIRS

Having estimated this critical age  $T$  (on Method I) it may be desirable to modify the conditions regarding the guaranteed period of service and repairs, and to restrict this period to  $T$  years instead of the entire working life-time. Normally this period may be expected to lie between ages  $n$  and  $n+m$  as defined above. The modified conditions may be :

(1) The service and repairs guarantee will cease when the tractor is  $T$  year old.

(2) Between ages  $n$  and  $T$ , the option will be available to the purchaser for the surrender of the old tractor and its replacement by a new one at reduced price provided the tractor's condition at the date of surrender is regarded as normal. The Company will reserve to itself the right to indicate the amount it is prepared to refund for unavailed of future repairs etc. in case of surrender.

(3) After age  $T$ , only the value  $S$  of the tractor as scrap can be offered.

Under these modified conditions :

(i) The total cost of a new tractor together with provision for servicing etc. upto the age  $T$  will be

$$P + \frac{K_0 - K_T}{l_0} \dots (4.1)$$

(ii) If the cost of repairs etc. is to be spread over monthly instalments for  $s$  years, the monthly payment will be

$$\frac{1}{12} \frac{K_0 - K_T}{l_0} \frac{1}{\delta \left( \frac{12}{s} \right)} \dots (4.2)$$

(iii) A 'normally alive' tractor aged  $x$  where  $n < x < T$  can be surrendered (the condition regarding normalcy to be accepted by the company at its discretion) and replaced by a new tractor at a reduced price of

$$P' + \frac{K_0 - K_T}{l_0} - \frac{K_x}{D_x} - S. \dots (4.3)$$

It is recognised that the actual experience of the working of a particular scheme may indicate the need for certain adjustments in the formulae developed above or in the conditions specified.

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# STATISTICAL WORK OF THE INTERNATIONAL LABOUR ORGANISATION\*

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**SUMMARY.** In common with most statistical work at the international level, the ILO seeks to foster the development of national labour statistics where needed and the promotion of international comparability in labour statistics. The main topics covered are employment, unemployment and under-employment, wages, consumer prices and family living studies. The Statistical Division of the Office forms the nucleus of the statistical services of the Organisation. It is supplemented by expert consultants recruited for specific projects on an *ad hoc* basis and assigned to countries under the expanded programme of technical assistance of the United Nations and specialised agencies. The general statistical work of the Organisation, especially in the sphere of methodology and standardisation, is guided by various expert bodies, especially the various International Conferences of Labour Statisticians. Diverse forms of activities are developed to achieve the statistical objectives of the ILO. First is the dissemination of the current statistical information on an internationally comparable basis through the routine publications of the Office, viz: the *Year Book of Labour Statistics* issued annually and *Statistical Supplement of the International Labour Review*, issued monthly. These are supplemented by various research publications. Then there is work in the sphere of statistical methodology. Much of this work relates to the development of statistical standards. In general, recommendations embodying international standards are formulated or approved by the International Conference of Labour Statisticians or by committees, or working groups of experts as appropriate. In this context, the task of prior intensive research as well as of the follow-up responsibility is assumed by the Statistical Division of the Office. A third form of activity developed in recent years is direct operational aid or technical assistance to countries for establishing or strengthening their labour statistics by various means, such as the assignment of expert consultants, arrangements for training of national technicians, holding of seminars, etc. In recent years considerable emphasis has been placed on topics of special interest to the less developed countries. Chief among these are the fields of family living studies and the measurement of underemployment. As labour statistics fall within the general domain of social and economic statistics, appropriate machinery has been set up for co-ordination with the statistical activities of the United Nations and of the other specialised agencies concerned. The tripartite structure of the ILO, that is the representation of employers' and workers' organisations as well as of Governments on the ILO, has proved to be an asset in the discharge of the statistical functions of the Organisation.

## INTRODUCTION

The International Labour Organisation (referred to hereafter as the ILO) was founded in 1919 by a war-weary world as an instrument for the establishment of enduring peace through social justice. The objective of the promotion of social justice is sought in various ways, of which perhaps the most important is the improvement of the working and living conditions of the world's labour. Its statistical work is geared to serve these basic ends of the Organisation. The major effort of the ILO in the statistical field is directed towards the development of statistics throwing light on various aspects of the working and living conditions of workers so that adequate basis may be provided for the formulation of policy for improving

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\*Summary of a seminar lecture delivered by Mr. Kailas Doctor, a staff member of the International Labour Office, at the Indian Statistical Institute, Calcutta, 15 February 1957.



these conditions and for the appraisal of the progress realised in this respect. These statistics are conventionally designated as labour statistics.

A brief account of the scope and type of activities of the ILO will be justified as it provides a useful background to its statistical work. The field covered by the Organisation includes traditional labour topics, such as the regulation of the conditions of work and employment of workers in general and of specific groups thereof, such as women, young workers, etc.; the right of workers to organise into trade unions and the functions of the latter, safety and health of workers at workplaces, industrial law and its practice, etc. Recent years have witnessed an increasing trend of viewing labour matters not in isolation but as an integral part of evolving social and economic patterns. This approach is evident in the new emphasis laid in ILO activities on matters of relatively wider interest, such as manpower policies in relation to full employment objectives, including employment service organisation, migration, vocational guidance and training, social security measures to afford protection to bread-winners against interruption or loss of earning capacity, social and labour problems raised by industrialisation and by automation.

The ILO endeavours to discharge its functions in these fields by diverse forms of activities. The Organisation strives to serve as a clearing house of information on social and labour questions in all parts of the world by collection, publication and wide dissemination of such information. It develops instruments in the form of international treaties, embodying international standards of policy, legislation and administrative practice in appropriate labour fields to which member countries are invited to adhere. In recent years, as a complement to its informational and legislative functions, the ILO has intensified operational services offered to countries seeking such aid.

#### STATISTICAL FUNCTIONS OF INTERNATIONAL AGENCIES

For a proper understanding of the statistical work of the ILO, the nature and functions of statistical work at the international level in general, and of international agencies in particular, need to be borne in mind. The functions, which may be divided for convenience into four groups, nonetheless tend to reinforce and complement one another:

- (1) compilation and presentation of national data from various countries on a comparable basis :
- (2) analytical, primarily inter-country, studies based on statistics;
- (3) development of methodology, including the formulation and application of international standards; and
- (4) direct operational assistance to countries in the development of national statistics.

The providing of relevant current statistical information of the various countries concerned on uniform lines is a major function of international agencies. For concerted international action, meaningful statistical basis has to be provided wherever necessary. An international agency is seldom a direct producer of raw data. The statistics produced by the various countries are designed primarily to meet national needs. Wide differences in social and economic conditions between the various countries throw up parallel differences in national requirements. The level of statistical development and the nature of the statistical system also varies widely. International compilation of statistics, therefore, generally entails considerable adaptation of national statistics to the standard specifications. An international agency may thus be considered an intermediate user and a secondary source of national statistics. An illustration of this type of work is provided by the various statistical year-books published by the international organisations.

The wealth of data contained in the statistical year books or bulletins of the international agencies is drawn upon by a rather limited circle of users, such as researchers, statisticians, economists, etc. A much wider circle of potential users of such data are put off by the rather forbidding mass of tables. The multi-lingual character of such publications usually imposes an additional strain. The publication of special studies or articles on selected topics utilising the data collected from the various countries for the regular statistical publications of the agency, supplemented by sources of national data where necessary, is an important step to make such data more readily accessible. Such studies have another important function as well. They permit deeper analysis and help to bring out clearly the trends and inter-country comparisons which may be only implicit in the data even when presented in the common framework used in the agency's routine statistical publications.

Closely inter-linked with the promotion of the compilation of fuller and more comparable statistics in the various countries is the work on the developments of methodology. The formulation of international statistical standards, together with the development of aids to facilitate the application of the standards, is perhaps the most important, but not the sole aspect of the methodological work. Apart from undertaking independent methodological research, international agencies devote considerable part of their resources to promote the interchange of the related specialised knowledge in all parts of the world. The international standards embody requirements as to the scope of data, the definitions of the terms used, methods of collection of data, tabulation, frequency of publications, etc. These standards are usually formulated or finalised by appropriate bodies of national experts or representatives convened under the auspices of the international agencies. Countries are urged to compile national statistics consistent with such international recommendations.

The formulation of statistical standards in the form of International Conventions was attempted between the Wars.\* It was hoped that the resulting juridical

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\* The Convention concerning Economic Statistics, League of Nations, 1928; and Convention (No. 63) concerning Statistics of Wages and Hours of Work, ILO, 1938.

basis would help towards a more effective adoption and application of international recommendations. The experience, however, was not too successful, presumably due to the rigidities inherent in such an approach. The current trend is to adopt a more flexible approach to the subject so that international recommendations may be adapted to shifts in emphasis caused by changes in the social and economic conditions. Basic international recommendations tend to be less detailed and rigid, greater international comparability within the frame-work of such recommendations is now sought by more informal means on the practical plane, such as frequent consultations between technicians of countries at working parties conferences, seminars, etc., preparation of working materials, e.g. instruction books, manuals, etc.

A factor apt to be overlooked is that conformity with international recommendations does not imply their uncritical application in the compilation of the relevant national statistics. The primacy of national needs in the preparation of statistics of a country is unquestionable. There need, however, be no real conflict between national requirements and interests of international comparability. The international standards themselves are usually formulated by drawing upon the pool of the different national experiences, and, in consequence, generally provide a reliable guide for development of national statistics. Where certain deviations are indicated in the national interest, e.g. industrial classification where specific identification of special industry groups of importance in the country is desirable, international recommendations may still be observed if the national data are amenable to a recast or conversion to international specifications. Convertibility to, rather than the literal adoption of, international standards is often the solution to meet exigencies of particular national requirements.

The intensification of direct operational aid, or "technical assistance" as it is commonly called, to requesting countries is a recent but natural extension and complement of the other statistical functions of international organisations. The new emphasis on this function is necessary in order to make the experience and resources of the organisation immediately and practically available to countries for the effective solution of difficulties in the development of their statistics. Technical assistance takes various forms, such as furnishing the services of a consultant, the award of fellowships for statistical education and training to nationals, holding seminars or training course, supply of equipment, etc.

One aspect of statistical work at the international level needs to be particularly emphasised. The success of such work rests in full measure on willing participation and co-operation of the various countries. International agencies, unlike national administrations, have no compulsory powers. The method of work of international agencies is that of continuous and concerted international effort for the promotion of the common objectives. For the co-operation of countries in international statistical work, the method is that of persuasion, appealing to the enlightened self interest of the countries themselves.



## STATISTICAL WORK OF I.L.O.

### FIELDS COVERED BY THE I.L.O.

The statistical activities of the I.L.O. cover a wide range of topics designated collectively as labour statistics. The scope of each such major topic is briefly indicated below.

*Labour force.* The statistics in this field show the economically active population and its distribution according to various characteristics, e.g. sex, age group, area, industrial group, etc. These are basic statistics and as such often used as benchmarks for other related statistical series. The most common source of these statistics is the population census although in recent years alternative sources such as periodic sample surveys of the population are utilised to obtain more up-to-date data.

*Employment.* The statistics in this field are usually periodic data of the employed population, i.e. persons with a job, either taken as a whole or specific sections thereof, e.g. wage-earners in the textile industry. They generally serve to indicate the relevant trends. Common sources of such data are periodic statistical reports from establishments, social security records, etc.

*Unemployment.* The statistics in this field are periodic data relating to the part of the population which is wholly or partly unemployed, i.e. out of work and seeking employment. Such data may also relate to the population as a whole or to specific sections thereof, e.g. insured employment in specific industries. Common sources of such data are the registration of job seekers at the employment exchange, labour force sample surveys, unemployment insurance records, etc.

*Hours of work.* The statistics in this field relate to the average number of hours actually worked per worker or the normal number of working hours over a specific period, usually a week. The usual source of the statistics of hours actually worked is the periodic statistical report from establishments while for normal hours of work the data may be derived from the relevant legislation or labour inspectorate reports.

*Wages and labour income.* The statistics in this field relate to remuneration paid to labour for employment. The data cover average earning, e.g. take-home pay, and the labour cost to employers which includes, in addition to the pay-roll, various fringe benefits which may be accorded to labour, e.g. vacations with pay, statutory or non-statutory social security benefits. Common sources of such data are the periodic statistical reports from establishments, social insurance records, collective agreements, etc.

*Consumer prices.* The statistics under this topic cover consumer price indices and the data on retail prices of selected consumer goods. The indices are designed to show changes over time in the cash outlay required to maintain a given pattern of goods and services, taken as a whole, for consumers in general or for a defined group, e.g. urban wage earners. Retail prices are compiled usually in respect of articles of

common consumption such as foodstuffs, beverages, fuel and light, soap and cigarettes, etc. These periodic statistics are based on price quotations from outlets of retail sales.

*Family living studies.* Statistics in this field provide data regarding the levels of living of families or households and in particular the sources and amounts of income and the itemised distribution of family or household expenditure. The statistics are usually obtained from an intensive investigation covering an extended period, from one month to a full year, on the living conditions of a sample of households which may be drawn from the population as a whole or from specific segments thereof.

*Social security.* The statistics generally compiled under this topic relate to public schemes set up with the following objects: for the maintenance of the income of breadwinners in case of interruption or loss of earning capacity, e.g. sickness and maternity, old age, etc.; for providing medical care to breadwinners and their families; for providing income supplements to breadwinners who have to support other dependants. The data are derived from the operations of the social security schemes and they usually furnish particulars of the persons covered, details of benefit cases and benefit payments and income and expenditure of such schemes.

*Industrial injuries.* Statistics in this field bear on injuries arising in the course of and out of employment. The injuries may result from industrial accidents or from occupational diseases. The usual sources of such data are the records of the labour inspectorate authorities to whom such injuries have to be compulsorily reported or the records of agencies in charge of the payment of compensation.

*Miscellaneous topics.* This comprises of residual topics of direct labour interest not covered above such as labour productivity, industrial disputes, trade union registration, etc. The sources of statistics for this group are diverse; in many cases the data are obtained as by-product of the operations of the relevant legislation or of the administrative process.

#### ORGANISATION OF STATISTICAL SERVICES

*Office.* The staff of the Statistical Division at the headquarters of the International Labour Office (referred to hereafter as the Office) in Geneva forms the permanent nucleus of the Organisation's statistical services. This staff is 25 strong at present. It is headed by the Chief Statistician; it includes 15 professionally qualified statisticians, the rest of the staff being made up of auxiliary personnel. The tasks of the Statistical Division are varied, and include the compilation and publication of current labour statistics, methodological research, preparatory work, servicing and follow-up of meetings of statistical experts, etc. In fact, the Division shoulders major responsibility for much of the ILO's statistical activities described in a following section.

The staff of the Statistical Division is supplemented by a number of qualified statisticians engaged usually for limited periods and assigned as expert consultants to countries requesting aid for specific projects under the Technical Assistance Programme. At present (June 1957) the I.L.O. has six such expert consultants on field assignments; three more are expected to join their posts of duty shortly.

*Expert bodies.* The statistical work of the I.L.O., especially in its methodology functions, is powerfully guided by meetings of competent groups of statistical experts convened by the Organisation from time to time. Such meetings fall into two major categories. First are the various meetings of the International Conference of Labour Statisticians to which member countries are invited to send delegates. Second are the meetings of committees or working groups of experts to which national specialists are nominated by the I.L.O. in their individual scientific capacity.

The main function of the International Conference of Labour Statisticians is the formulation of standards and the providing of general orientation in methodological work in the field of labour statistics. The first International Conference of Labour Statisticians was convened in 1923. Since its inception, nine Conferences have altogether been convened at intervals. The 9th Conference was held in April 1957. At that Conference 45 countries were represented. During the post war period, the Conference has met four times and its recommendations have included new or revised standards in the fields of employment and unemployment statistics, international comparisons of real wages, classification of the economically active population by occupations, consumer price statistics, family living studies, social security statistics, industrial injury rates and the statistics of occupational disease.

The committees or working groups of experts are usually composed of reputed specialists in the field concerned. The experts are nominated by the I.L.O. In making the selection of experts, a special effort is made to secure a balanced representation of the various regions and diverse statistical systems. In most cases, the purpose of convening such meetings is to elicit guidance based on broad expert agreement in a given sphere of methodology. A typical example of such a meeting is a meeting of a group of internationally reputed experts in the field of family living surveys convened by the I.L.O. in Geneva in September 1955. The experts were drawn from eight selected countries. Representatives from other international agencies interested in the subject also participated in the deliberations of the meeting. The task of the meeting was to make recommendations on the scope, the organisation and the techniques of family living surveys. The conclusions reached by the experts serve a dual purpose. They offer guidance to the I.L.O. in the orientation of its future programme in this field. At the same time they also provide valuable counsel to interested national technicians.

A meeting of experts may also be convened to guide the work of the Office in the conducting of special statistical enquiries. Meetings with such a precisely defined assignment having severely practical emphasis are not uncommon. A typical



recent example was a meeting of a group of European experts on social changes held in Geneva in May 1955. The function of the expert group was to assist the Office in its preparations for a field inquiry designed to obtain data for a comparative study on the wages and related elements of labour cost in the various European countries. The meeting accomplished its task by reviewing the preliminary plans for the proposed survey, regarding its scope, methodology, etc. that were presented to it by the Office.

#### MAJOR FUNCTIONS OF TYPES OF ACTIVITIES

*Dissemination of current statistics.* A basic statistical activity of the Office is the compilation and publication of current information in the field of labour statistics on an international basis. This information is regularly published in two periodical sources - annually in the *Year Book of Labour Statistics* and monthly in the *Statistical Supplement* of the *International Labour Review*. The *Year Book* provides fairly comprehensive and detailed data for most of the labour statistics topics. The data include comparative figures for a number of earlier years. The *Statistical Supplement* furnishes data on consumer price indices and unemployment each month, on unemployment and wages each quarter and data on retail prices of selected consumer goods, normal hours of work and wage rates in over 40 specified occupations annually. The statistics in the *Year Book* are obtained by means of standard questionnaires in tabular form addressed to countries, supplemented by data drawn from published statistical sources. In most cases, the national statistical offices concerned are able to furnish the required statistics by adaptation of existing national data. The monthly and quarterly data published in the *Statistical Supplement* are based on existing national information specially communicated to the Office for this purpose, supplemented by data from published sources. In a number of cases countries undertake special annual enquiries to obtain the data, in conformity with the Office's specifications, on retail prices of articles of common consumption and normal hours of work and wages in selected occupations. The widespread deviations between the national statistical compilations and the data in accordance with standard specifications asked for by the Office are amply brought out by the abundance of footnotes to the statistical tables in these publications.

*Studies and research.* The publication of current statistics in the above-mentioned sources is in the nature of a routine informational activity. In addition, the Office constantly undertakes special statistical research studies to throw light on selected subjects. In such studies the relevant statistics are usually first assembled from existing sources and then reviewed analytically. The publication of the results of such studies has thus partly informational and partly analytical functions. The results of research projects are published from time to time either as separate studies or as articles, reports, etc. in the routine publications of the Office. For example, a number of articles based on special research were published in the *International Labour Review* during 1956. These covered varied fields such as the structure of the labour force, consumer price trends, labour productivity trends, industrial dispute statistics, etc.

## STATISTICAL WORK OF I.L.O.

Certain research projects require original data to be assembled usually by means of a special inquiry. For example, for the comparative study on the costs of social security for the years 1949-1954 undertaken by the Office the data were obtained by means of a questionnaire addressed to the various countries. In order to furnish data which could be fitted into the framework of the Office questionnaire, most countries had to re-arrange and adjust the existing national data in this field. In some cases special estimates had to be made. The results of the study have been published for some 40 countries in respect of which relatively satisfactory statistics were available.\*

*Development of methodology.* Another major and continuing function is the development of methodology in labour statistics. Much of the methodological work is that related to statistical standards. The existing international recommendations embodying the standards require to be kept under constant review in the light of changes in social and economic conditions and requirements and general development in statistical methods and techniques. For example, since the War the existing standards of employment and unemployment statistics needed to be revised successively in 1947 and 1954 to take account of changing needs and of the emergence of the techniques of labour force sample surveys. In addition, concepts, definitions and methods need to be developed in previously uncharted fields as changing conditions emphasise new needs. For example, with the focus of attention on the problems of economic development of the densely populated less-developed countries, work on the concept and methods of measurement of underemployment has assumed new urgency and is receiving keen attention at the international level. As indicative of the nature of work done in the field of statistical methodology and standards, the documents published in the context of the 6th, 7th, 8th and 9th International Conferences of Labour Statistics are shown in the Appendix.

The development of standards requires a good deal of spade-work. This preparatory work includes a careful review of existing national practices, the identification of common or essential features and the study of related developments in methodology and techniques. The Office strives to develop these activities which are closely associated with the standard defining functions of the Organisation. The standards, which are usually in the form of recommendations formulated or approved by appropriate international expert bodies, need to be brought to the notice of interested national statistical services. Steps have to be taken to promote the application of these standards by such means as the development of working materials and other types of aid. These ancillary services are also a part of the statistical work of the Office.

Apart from the work on the international standards *per se*, the Organisation endeavours to discharge its general function of being a clearing house of specialised knowledge on methods of labour statistics. This activity helps to foster the develop-

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\* *The Costs of Social Security 1949-54.* International Labour Office, Geneva, 1958.

ment of methodology. A practical way to achieve this end is to assure a wide dissemination of information on the relevant national practices. To cite an example of this type of activity, in 1960 the Office published and circulated to its statistical contacts a mimeographed document entitled *Chief Characteristics of Recent Family Living Studies*.

*Operational Services.* In recent years direct aid or technical assistance to countries who wish to develop their statistical services has assumed a new importance. This assistance is generally furnished under the expanded programme of technical assistance of the United Nations and specialised agencies. The assistance takes various forms. A common type of project envisages the assignment of an expert consultant to a requesting country for the development of a specific branch of labour statistics or for the setting up or improvement of the country's labour statistics services. In some cases the services of an expert consultant are needed for the production of statistics which may underlie a substantive project in some other field, e.g. a survey of manpower resources where the expert is required to compile and process substantial statistical data as part of the project. Another form of assistance is the award of fellowships for study and training in labour statistics. While in a few cases fellows may be trained in their country of origin, the more common case is that of training abroad. In some cases the training is provided in another country in the region; in others the fellows are sent to appropriate advanced countries with well developed statistical services. Frequently fellowships are tied to projects under which the services of an expert consultant are furnished; the object of such arrangements is to ensure that trained national officials become available for continuing the work started by the expert after his departure. Yet another form of assistance is the holding of seminars and meetings of national technicians. The meetings may be regional or world-wide in scope. Such meetings provide an opportunity for national statisticians to exchange information on common problems and their possible solutions as tried out in other countries, thus helping participants to acquire a wider background to the **problems of labour statistics**.

The Office has under preparation a series of manuals on major labour statistics topics. The manuals will provide methodological information for the compilation of statistics in the fields of employment and unemployment, wages and consumer prices. This Office project is part of a comprehensive and concerted programme for the preparation of manuals in various statistical fields under the technical assistance programme of the United Nations and specialised agencies.

*Other servicing activities.* Statistical services form an organic part of the general functions of the Organisation. The Statistical Division is frequently called upon to provide staff support on statistical aspects of the general activities of the Office. Background statistical data need to be furnished for surveys of current social and economic conditions, either for countries in general or for specific population groups, or economic sectors. The providing of statistical background data needed for administrative use is another such function. For example, the ILO Administration



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is kept bristled with up to date information on consumer price trends at important duty stations, this information is needed to keep under review the relevant aspects of administrative policies and planning.

### CO-ORDINATION WITH OTHER INTERNATIONAL STATISTICAL ACTIVITIES

Although the respective fields of competence in statistical work of the United Nations, the ILO and the other specialised agencies have been broadly defined under inter-agency agreements, precise delimitation is not possible in practice in each case as many topics are closely interlinked. Action in one field has implication for other related fields. Labour statistics fall within the wider domain of social and economic statistics. It is, therefore, of vital importance to co-ordinate effectively the statistical work of the ILO and that of the other international agencies. This co-ordination is a continuing process. It is necessary to exercise constant vigilance to see that overlap of activities is reduced to a minimum and that no inconsistencies are introduced in the recommendations made by the various agencies.

Broad definition of respective functions is provided for in the agreement between the ILO and the United Nations by which the former became a specialised agency of the latter. The general principle underlying such inter-agency agreements is that the statistical functions should be assigned on the same basis as the substantive functions of the respective agencies. Thus the major responsibility for statistics on topics recognised in the basic agreement of primary labour interest falls on the ILO.

Co-ordination takes place at several levels. At the working level the Statistical Division of the Office is in constant touch with the Statistical Office of the United Nations and the statistical services of the other specialised agencies as appropriate. Mutual consultations are held as each specific matter arises for consideration. Further, there is participation of other appropriate agencies at statistical meetings under ILO auspices and vice-versa. Broader issues are considered at appropriate higher levels. Special mention should be made of the Statistical Commission, an organ of the Economic and Social Council of the United Nations. One of the major functions of the latter body is inter-agency co-ordination in the social and economic fields. The Commission, which meets every two years, **undertakes a comprehensive review of the** statistical programmes of the agencies. The representatives of the statistical services of the agencies participate in its deliberations. A major task of the Commission is to make recommendations for the promotion of continuing inter-agency co-ordination.

### RECENT ACTIVITIES OF SPECIAL INTEREST TO ASIAN COUNTRIES

While almost the whole range of the statistical work of the ILO may be found to be of some value to Asian countries, its action in certain fields and certain types of activities developed by the Organisation stand out as of special interest. In this context the recent activities in the fields of family living studies, measurement of

underemployment as well as the operations under the technical assistance programme deserve special mention.

In current discussions on the problems of economic progress in the less developed countries, the phenomenon of underemployment looms large. Considerable interest has been focussed on underemployment both at national and international levels. Although in a number of countries attempts have been made to measure underemployment, only a few countries have explored adequately the underlying concepts and techniques. Indeed the complexity of this subject presents a challenge to statistical methodology, especially at the international level. In recognition of the pressing need for action in this field, the topic of the methods of measurement of underemployment was put as an item on the agenda of the Ninth International Conference of Labour Statisticians. The Office presented to the Ninth Conference a report entitled "The Measurement of Underemployment." This report contains a brief description of national studies in this field and a discussion of the conceptual and methodological problems involved. The resolution on this subject adopted at the Ninth Conference concentrates on the measurement of what it terms the "visible" underemployment as a first step, and recommends the undertaking of intensive research, as well as field studies as pre-requisites to the development of measures for the other components of underemployment.

Another field of special interest which has attracted intense activity lately is that of family living studies. The most important development in this field was the meeting of experts on family living studies referred to earlier, convened by the ILO in Geneva in September 1955. The meeting urged countries, especially the less developed ones, to give serious consideration to the development of family living studies as a source for obtaining statistics on various aspects of social and economic conditions of the people. In accordance with the recommendations of the experts the ILO has assigned a high priority to this field in its programme of work. Apart from the dissemination of methodological information,\* a major emphasis has been given to projects in this field under the technical assistance programme.

A good part of the ILO's operational activities is of special significance to the Asian countries. A brief account of the ILO's operations under the technical assistance programme in the region is given here. At present an expert is assisting the Government of Indonesia in organising family living studies in the country. Earlier, experts were assigned to Burma, Pakistan and Singapore and also to Indonesia for the development of labour statistics. The services of labour statistics consultants will be furnished later this year to India and South Viet-Nam. Moreover, manpower surveys and related projects with statistical import have been carried out or are now under way in Ceylon, India, Indonesia, Pakistan and South Viet-Nam. A number

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\* Reference is made here to the documents prepared for the consideration of the meeting of experts viz : mimeographed documents, Nos. FL 1-20, ILO, Geneva, 1955, and the document entitled *General Characteristics of Recent Family Living Studies*, ILO, Geneva, 1956.

## STATISTICAL WORK OF I.L.O.

of technicians from countries in the region have received further training in labour statistics under the programme by the award of fellowships. A seminar on labour statistics with wide participation of specialists from countries in the region was held in New Delhi in 1951.\*

### STATISTICS AND THE TRIPARTITE STRUCTURE OF ILO

A special organisational feature of the ILO is its tripartite structure. Organisations of workers and employers as well as Governments are represented on the policy making and legislative organs of the ILO. In contrast, the United Nations and its other specialised agencies are purely inter-governmental. Although the organs of the ILO in the statistical field are usually composed of individuals in their capacity as scientists or as Government representatives, the tripartite structure has important advantages for the statistical work of the Organisation. Employers' and workers' organisations are important users of labour statistics. Views expressed by them at the various forums of the ILO provide valuable guidance for keeping the statistical programme tuned to emerging needs for action in the labour field. Moreover, enterprises and individuals associated with the organisations are usually the primary source of national labour statistics. This proves a great asset in terms of more effective co-operation whenever the ILO has launched a special statistical inquiry to collect grass roots data from the various member countries. More indirectly, national labour statistics programmes may also be facilitated through a better understanding of the nature and value of labour statistics which employers and workers may come to acquire through their participation in the activities of the ILO.

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\* A second Asian seminar on labour statistics was held in Manila in 1958.



# Appendix

## RECENT ILO ACTIVITIES IN STATISTICAL METHODOLOGY AND STANDARDS

### REPORTS PREPARED FOR THE INTERNATIONAL CONFERENCES OF LABOUR STATISTICIANS SINCE THE WAR

The reports prepared in the context of the Sixth, the Seventh, the Eighth and the Ninth International Conference of Labour Statisticians are listed below to indicate broadly the range of topics covered by recent activities of the I.L.O. in the sphere of statistical methodology and standards. The titles of the reports which the I.L.O. publishes are followed by their identification particulars where appropriate.

Title	Studies and Reports Number	Part Number
<i>Sixth Conference (1947)</i>		
(1) Employment, Unemployment and Labour Force Statistics	7	1
(2) Cost of Living Statistics	7	2
(3) Methods of Statistics of Industrial Injuries	7	3
(4) The Sixth International Conference of Labour Statisticians (Reports)	7	4
<i>Seventh Conference (1949)</i>		
(1) International Standard Classification of Occupations	15	
(2) Wages and Payroll Statistics	16	
(3) Methods of Family Living Statistics	17	
(4) Methods of Statistics of Labour Productivity	18	
(5) Report of the Seventh International Conference of Labour Statisticians		
<i>Eighth Conference (1954)</i>		
(1) General Report on the Progress of Labour Statistics; Statistics of Occupational Diseases	I	I
(2) International Standard Classification of Occupations; Major and Minor Groups	II	II
(3) International Comparison of Real Wages	III	
(4) Employment and Unemployment Statistics	IV	
(5) Report of the Eighth International Conference of Labour Statisticians.		
<i>Ninth Conference (May 1957)</i>		
(1) General Report on the Progress of Labour Statistics	I	
(2) International Standard Classification of occupations: Major, Minor and Unit Groups; Final Draft	II	
(3) International Classification according to Status	III	
(4) Measurement of Underemployment	IV	
(5) Social Security Statistics; Development and Uses	V	

(The documents for the Eighth and the Ninth Conference have been published in the mimeographed form only).

In addition, the following publications, published by the I.L.O., since 1957, may be of interest :

- (1) International Standard Classification of Occupations
- (2) The International Standardisation of Labour Statistics
- (3) Report on the Asian Seminar on Labour Statistics, November 1958 (a mimeographed document).

Paper received : May, 1957.

# THE NATIONAL SAMPLE SURVEY

## NUMBER 14

### REPORT ON SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

#### FOREWORD

1. This report on "Some Characteristics of the Economically Active Population" is based on the data collected by the National Sample Survey (NSS) from the 4th to 7th round between April 1952 and March 1954. It gives for the first time some characteristics of the population and of the labour force on an all India basis with breakdowns for rural and urban areas, different rural population zones, and different size classes of towns.

2. Some results of considerable demographic interest emerged in the course of the study. It was found, for example, that the larger the size (population) of the towns the smaller was the size (i.e. average number of persons) of households. Also the average size of households was smaller in occupations other than agriculture. This indicates that increasing industrialization and urbanization in India may act as a check on the growth of population.

3. Comparisons with the population data of the 1951 Census have yielded some important results. Compared to Census data, the age distribution of the population based on NSS rounds showed a higher proportion of population in the age group 0-14 years and a corresponding lower proportion of aged 65 years and above. The NSS results were consistent from round to round. It may also be mentioned that in the NSS, apart from listing the general demographic particulars, a large amount of information is collected about each member of the household, and the chance of missing the children is relatively small. A plausible explanation would seem to be that some of the children were missed in the 1951 Census. This incidentally illustrates the usefulness of collecting (in a multipurpose survey) information which does not appear to have a direct bearing on the topics under study.

4. In the Census of India 1951, economically active persons were classified by the concept of economic status, which divides the whole population into three groups, namely, (1) self-supporting persons (earners), (2) earning dependants, and (3) non-earning dependants: in Census of India 1931 and 1941 a similar classification was followed. This classification depends on whether a person's income is sufficient to maintain himself and is liable to be subjective in character. A more objective criterion of activity status, which classifies the population into (1) employers, (2) employees, (3) workers on own account, (4) unpaid household labour,

(5) unemployed, and (6) others, such as family members in domestic work, students, etc., is now widely used in censuses and surveys. The first four categories of activity status constitute the gainfully employed population; and together with the fifth category of unemployed, constitute the economically active population or the labour force. An attempt has been made in this report to estimate the gainfully employed in India from the 1951 Census data. A consistent shortfall was observed in the Census proportions, except for urban males, as compared to NSS proportions; this again was probably due to the under-reporting of unpaid household labour, especially females, in the Census.

5. According to NSS during the period April 1953–February 1954, 44.4 per cent of the total population in all-India (45.9 per cent of the rural population and 36.2 per cent of the urban population) were in the labour force. Of the males, 58.5 per cent in all-India (59.0 per cent in the rural, and 55.4 per cent in the urban sector), and of the females, 29.7 per cent in all-India (32.3 per cent in the rural and 15.0 per cent in the urban sector) were in the labour force. The proportion of male employees increased and the proportion of female employees and total female labour force decreased with increasing size classes of towns.

6. India has many more persons of a younger age compared to the industrially developed countries which is typical of the pre-industrial economies. This is partially offset by some of the younger persons below age 15 being economically active which, however, is not desirable in itself. The average working life of Indian males is smaller compared to that in the USA and New Zealand, which is due to the lower complete expectation of life of Indian males at different ages.

7. The concept of "unemployment" as adopted in the industrially advanced countries, –in the sense of either being without a job, or seeking one and willing and able to accept a job if offered –cannot always be used in India because there are many persons who are often fully occupied for a part of the time and partially or not at all for the rest of the period, and also because there are a large number of persons who work on their own account or as unpaid labour in household enterprises and cannot, therefore, lose their jobs. In the 7th round of the NSS an attempt was therefore made to collect information on the intensity of work, that is, whether a person was gainfully active for the whole of the normal full working time, or for only half or a quarter of the normal working time. It was found that an estimated number of 47.7 million (29.3 per cent of the gainfully employed or 12.7 per cent of the total population) worked with less than full intensity, and 19.4 million (11.9 per cent of the gainfully employed, or 5.2 per cent of the population) worked with intensity of a quarter or less of the normal full working time. Out of the 47.7 million persons, who were not working full time, at least 22.8 million persons (14.0 per cent of the gainfully employed, or 6.1 per cent of the total population) suffered from real "under-employment" for economic reasons, that is, lack of demand, lack of equipment and materials, slack season and off season etc.. Under-employment, as measured by intensity of employment or days of work out of 30 days preceding the date of survey, was seen to be very high for agricultural labour and was least for persons in administrative



## SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

services, and was higher in the rural than in the urban sector, and for females than for males.

8. The volume of under-employment in India is very great indeed. Fuller utilization of the under-employed must be the chief aim of planning for national development. Industrialization is essential but would take time as there is shortage of capital. It must be, however, speeded up as much as possible with emphasis on heavy industries producing capital goods. It is also necessary to promote labour-intensive and capital-saving methods of production to the greatest possible extent. This problem is complicated by the fact that most of the under-employed persons live in rural areas and are engaged in agricultural work which is usually of a seasonal character. Also, there is a very heavy demand for labour at certain times of the crop season, for example, for transplanting rice seedlings or for harvesting of crops. Some recent studies in the Indian Statistical Institute indicate that it may be economical for villages to maintain a supply of labour which would be required at the time of transplanting of rice or of harvesting agricultural crops even if they remain more or less unproductive for the greater part of the remaining period of the year. Though there is a general impression that there is much surplus population in villages, this is still an open question at least at the present level of technology. There must be a simultaneous progress of both agriculture and modern industries in India so that there would be continuing improvement of agricultural production and small scale industries in rural areas together with a rapid growth of organized industries all over the country.

9. The primary data were collected by the Field Branch of the National Sample Survey under the direct control of the Government of India. The processing and analysis of the data was done in the Indian Statistical Institute; and the report was prepared by Ranjan Kumar Som and Ajit Das Gupta assisted by Suranjan Sen Gupta and B. Thrivikraman Pillai and other workers of the Institute.

31 March 1959

P. C. MAHALANOBIS

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# THE NATIONAL SAMPLE SURVEY

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### REPORT ON SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

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# THE NATIONAL SAMPLE SURVEY

## NUMBER 14

### REPORT ON SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

*This Report on Some Characteristics of the Economically Active Population was prepared by the Indian Statistical Institute and is being published in the form in which it was submitted to the Government of India. The views contained in the report are not necessarily those of the Government of India.\**

#### CHAPTER ONE

#### INTRODUCTION

1.1. The economically active population, in its deployment among the different industry and occupation groups and the related intensities of employment and income, has been studied in this Report. The sex-age composition, civil condition and household size are the general population characteristics used in cross-classification in the study. Attempts have also been made to assess the degree of occupational inertia within the household, to estimate the extent of under-utilised manpower in different branches of the economy and the expectation of working life-time. The Report is structured mainly on National Sample Survey (NSS) 4th round (April-September 1952) and 7th round (October 1953-March 1954) material, but extensive use has also been made of NSS 5th and 6th round data.

1.2. The importance of continued demographic studies of this nature in long-term perspective as well as in short-term planning is obvious. Detailed knowledge about the current utilisation of human resources is essential for any realistic programme of national development. The Census, taken once in ten years, cannot provide the required information frequently enough. By reasons of its vast scale and organisational set-up, it can hardly furnish an intimate picture of the inter-relations between population characteristics and socio-economic factors. The medium of sample surveys has, therefore, been adopted widely to get the basic information necessary for visualising and prompting desirable occupational and industrial shifts through induced social and economic changes, and to assess their impact.

1.3. Data on general demography are being collected in the successive NSS rounds. Up to NSS 7th round, demographic information was collected from about 90,000 sample households, spread over the whole country. Owing to limitation of resources, however, much of the data yet remain to be analyzed. The trend

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\* The draft report (Number D. 14) was submitted to the Government of India in October 1956.

of fertility was studied from NSS 2nd and 4th round data in National Sample Survey No. 7 (*Couple Fertility*) (December 1955). A report on the urban unemployed, based on the *ad hoc* preliminary unemployment survey put through between NSS 6th and 7th round, was published in National Sample Survey No. 8 (March 1956); in NSS 9th and 10th round, a much more comprehensive survey about employment, unemployment and disposition of labour time has been done, of which the results are under analysis for reporting. NSS 7th and 8th round data are also under similar analysis for reporting on the current vital rates.

1.4. Mention is made above of the analysis of NSS material, done so far or under progress in the line, to indicate the correct perspective against which the results given in the present Report should be viewed. For instance, it will now be clear that the data on which the Report is based had not a survey of the unemployment situation directly in view. In the matter of unemployment statistics, therefore, greater reliance should be placed on the results of the NSS rounds in which specific unemployment surveys were conducted. In fact, many of the results given in this Report should be treated as tentative, as indicated later in appropriate sections of the Report.

1.5. Mention may also be made here of some important surveys in the line done in the past. The Bengal Handloom Survey (1937) and the Enquiry into the Conditions of Agricultural Labour in West Bengal 1946-47 (1953) conducted by the Indian Statistical Institute, the United Nations and Government of India Joint Mysore Population Survey 1951, Socio-Economic Survey of Poona 1936-37 (1945) conducted by the Gokhale Institute of Politics and Economics, among the regional surveys, and the Ministry of Labour First Agricultural Labour Enquiry 1950-51 (1955), a countrywide survey, deserve special mention. Essential population data were collected in the successive Censuses; but as indicated earlier, the Censuses could not go deep into the study of inter-relations between the population and the socio-economic factors. Moreover, the Census, being a fixed point count, is liable to unknown seasonality bias.

1.6. Facsimile of the main demography blocks canvassed in NSS 4th and 7th rounds are given below. The general demography block in other NSS rounds, occasionally used in this Report, broadly conformed to the pattern of the same in 4th round.

1.7. The NSS data used in this Report were analysed as usual by two independent samples for every NSS round concerned. The advantages of this technique of analysis by two independent samples, each of which furnishes an independent and valid estimate of the item under analysis and gives directly an estimate of the margin of uncertainty involved, have been explained in the earlier NSS reports. As will be seen from the tables where independent sub-sample results have been given, the sub-sample agreement was generally good. An idea of the margin of uncertainty relating to any estimate can be had from the deviation between the two sub-sample estimates.

## SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

1.8. The sub-sample estimates for a few important items from different NSS rounds are consolidated in Table 1.2.2 of Annexure O. Though sub-sample agreements were good for overall national estimates, the margins of uncertainty grew bigger as various breakdowns were entered into. Much reliance should not therefore be placed on the figures where the number of households on which the estimates are based is small. But even where the deviation between the figures for the two sub-samples is high, the result may be adequate for framing policy decisions; the sampling error is not the sole criterion of adequacy of sample estimates.

Fourth Round

(1) classifying characters		(2) demography and occupation																
1. household type		serial number	relation to land						nature of occupation									
2. " occupation			write next to line on household or 1. description or 2. description of						primary									
3. " sex									secondary									
4. religion									Description									
5. group		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)		
6. mother tongue																		

(Seventh Round)

(1) classifying characters		(2) demography, occupation and expenditure															
1	household size	as on date of survey								during year - ended on							
2	land possessed (area in '00)	relation to land	as on date of survey								as on date of survey						
3	industry occupa- tion code		length of stay (days)								during year - ended on						
4	expenditure code		age last birthday								as on date of survey						
5	religion		sex								as on date of survey						
6	group		of total standard								of total standard						
7	mother tongue		education details								education details						
			economic status								economic status						
			industrial status								industrial status						
			employment (prev. 12 mos.)								employment (prev. 12 mos.)						
			duration of last illness								duration of last illness						
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1.9. For items which are generally known not to change rapidly over time, it is permissible to treat the estimates from the different NSS rounds as a set of comparable samples and pool them together. This, of course, will not be true if the underlying concepts have changed between rounds. In some items, however, the seasonality element introduced some real differences between the rounds, but there again pooling together of the data of two consecutive rounds, covering the whole year, will make the results more representative for the complete cycle of a year.

1.10. Details of NSS sampling design were given in NSS Reports No. 1 and No. 5. Very broadly, the design for the rural sector has been to divide the 2,400 odd tehsils of India into 240 strata on the criterion of contribution to consumer expenditure and geographical contiguity. Two sample tehsils were selected with replacement directly from each stratum, and then two sample villages from each sample tehsil, with probability proportional to population area. For the urban sector, the



towns were stratified according to population size and the desired number of sample towns were selected with replacement from each stratum. Thereafter the sample blocks from the sample towns were selected with probability proportional to population.

1.11 The numbers of sample villages, towns, urban blocks and households covered in NSS 4th to 7th round are given in Table (1.1).

TABLE 1.1. NUMBERS OF SAMPLE VILLAGES, TOWNS, URBAN BLOCKS, AND HOUSEHOLDS COVERED IN NSS 4th-7th ROUND

round	survey period	rural		urban		
		sample villages	sample households <sup>1</sup>	sample towns	sample urban blocks	sample households <sup>1</sup>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. fourth	April-September 1952	946	17,104	53	406	7,768
2. fifth	December 1952-March 1953	942	8,587	53	405	3,959
3. sixth	May 1953-August 1953	955	4,389	57	432	1,711
4. seventh	October 1953-March 1954	954	8,235	57	441	1,720

<sup>1</sup> Relating to demographic particulars only.

## CHAPTER TWO

## SUMMARY FINDINGS

2.1. The main findings of the study are summarised in this chapter. The results should be taken with the reservation about the margins of uncertainty as indicated in the previous chapter. The definitions of some of the terms used in a restricted and specialised sense are given for convenience in the later chapters where the relevant topic has been treated. Before the main results are presented, a few background facts, gathered from other sources<sup>1</sup> are reproduced.

2.2. *Background facts* : India has a land area of about 1.27 million square miles (811 million acres), with the second largest population for any country in the world, 360 million in 1951 and estimated to be 385 million in 1956. The growth rate was 1.32 per cent per year during the last decade, and about 5 million are now being added annually to the population. The complete expectation of life at birth is about 32 years.<sup>2</sup>

2.3. India is still predominantly agricultural-rural. About 70 per cent of the people depend on agricultural occupations for their livelihood and 83 per cent live in rural areas. Even a big proportion of the small-size towns show a good deal of rural characteristics. The land per head is about 2 acres, as compared to about 12 acres in the USA and 24 acres in the USSR. About 20 per cent of the rural households own no land; 50 per cent own less than 1.5 acres and their total share is only about 2 per cent of the total area owned by the rural households. The grave disparity in the ownership distribution of land will be clear from the fact that the top 10 per cent of the households own about 60 per cent of the total land.

2.4. Agricultural products constitute nearly half the net national product. Of the total geographical area of 811 million acres, about 300 million acres are annually cultivated and 55 million acres are under irrigation. The net output of the organised factories, employing ten or more persons with power or 20 or more persons without power, accounts for less than ten per cent of the net product. Of the 30 thousand odd factories in India, about 20 thousand employ less than 100 persons; only about a thousand factories are really big. The proportion of factory workers is about two per cent of the total employed population. The output of producer goods, including coal and other minerals, is about 16 per cent of the total fabricated output. Against the base year of 1937, the index of agricultural production oscillated around the base level till about 1952, to rise steeply by about 25 points after that. Industrial production rose to a higher level during the war, but the index oscillated round 115 till 1950 before taking a similar sharp upward turn to overtop the 160 mark in 1954-55.

<sup>1</sup> Most of these are taken from '*The Approach of Operational Research to Planning in India*' by P. C. Mahalanobis, *Sankhyā*, 16, pp. 3-130, 1955.

<sup>2</sup> The population base 1951 by age and sex in the six Census population zones, and the growth of population, the birth and death rates and the expectation of life during the past decades have been given in tables in Appendix 0.

2.5. The national income was about Rs. 10,500 crore<sup>2</sup> in 1953-54 and the per capita national income Rs. 281. The average cash expenditure was Rs. 18 per month per person. About two-thirds of the total household expenditure were on food, of which only half was accounted for by cash purchase.

2.6. There are at least four major religious faiths and at least twelve recognised major language groups in India.

2.7. The population average age is 24 years, about 41 per cent of the population being comprised of persons below 15 years of age, as compared to 23 per cent in the UK and 27 per cent in the USA. For every 100 females there are 104 males in India.

2.8. About 17 per cent of the population are literate. The percentage of literacy is about 12 in the rural sector and 35 in the urban sector. There is provision of schools for only 40 per cent of children in the age group 6-11. School facilities are naturally more concentrated in the urban sector.

2.9. *Household size*: The average all-India NSS household size<sup>1</sup> is 5.0, being 5.1 in the rural and 4.6 in the urban sector. In the rural sector, west population zone shows the largest household size of 5.3 and central zone the smallest household size of 4.8. In the urban sector, the household size tends to decrease with rising population size class of towns; household size thus falls from 4.7 in towns with population below 15 thousand to 4.1 in big cities. But the smaller household size in the urban sector appears to be rather due to the changed occupational structure than to urbanisation as such.

2.10. The average household size is generally larger among Muslims than among other religion groups, about 5.5 in the rural sector and 5.0 in the urban. For caste groups among the Hindus, middle caste households have the largest household size of 5.3 in the rural sector, while the upper and lower caste households have the largest household size of 4.6 in the urban sector. Household occupation cultivator returned the largest household size of 5.8 in the rural sector. Household occupation administrative and professional services show comparatively small household sizes of 4.5 and 4.7 in the rural and urban sectors respectively. Household occupations agricultural labour and manufacture of food products show the smallest household size of 4.2-4.3, if the miner households of which too few came in the sample are left out of account.

2.11. The household size is seen to increase with the household expenditure. In the household expenditure group of Rs. 1-50 per month, the average household size is 3.2 in the rural sector and 2.4 in the urban sector: the size rises beyond ten in both the sectors for the household expenditure group of Rs. 501-above.

2.12. *Household occupation*: The household occupation is defined as the primary occupation of the principal earner of the household. In the rural sector,

<sup>2</sup> 1 crore =  $10^7$  = 100 lakh.

<sup>1</sup> Persons who had taken the principal meals with a household for at least 16 out of 30 days preceding the date of enquiry qualified to be entered as members of the household.



## SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

household occupation cultivator claims by far the major proportion, 40.0 per cent. agricultural labour comes next with 19.1 per cent. In the urban sector, household occupation administrative and professional services claims 34.3 per cent of the households, trade and commerce group coming next with 13.8 per cent. In all India combined sectors, 33.4 per cent of the households reported household occupation cultivator, 16.2 per cent agricultural labour, and 12.6 per cent administrative and professional services. In the rural sector, the distribution of household occupations among the six population zones does not show any marked variation. In the urban sector, the proportion of households with household occupation administrative and professional services increases from 26.7 per cent in the smaller sized town to 45.5 per cent in the big cities.

2.13. *Occupational immobility Index of Inertia* : A very high degree of association between the household occupation and the occupations of the other gainfully employed persons in the household was observed. To measure the occupational immobility within the household for the different household occupation groups, an "Index of Inertia" was developed by expressing the number of employed persons in the household occupation as a percentage of the total number of employed persons in the household, leaving out of count the principal earner of the household. The overall inertia was higher in the rural than in the urban sector. Agricultural labour, share-cropper and cultivator among the agricultural occupations, and manufacturer of textiles and manufacturer of food products among the non-agricultural occupations show high inertia; the lowest inertia is shown by farmers among the agricultural occupations and by transport and communication services among the non-agricultural occupations. The administrative and professional services show comparatively low inertia in the rural sector but a high one in the urban sector.

2.14. *Household religion and caste* : In all-India, Hindu households constitute 86.1 per cent of all households, 88.0 per cent in the rural sector and 77.4 per cent in the urban sector. As between rural population zones and urban size classes of towns, Hindu households are relatively more numerous in central zone and in the small towns and cities. Among Hindus, lower caste households constitute 46.1 per cent in the rural sector, 39.4 per cent in the urban sector and 45.1 per cent in all-India combined sector. A comparatively high proportion of upper caste Hindu households appears in the urban sector. A good deal of variation in the percentage of Hindu households by caste groups is observed between the rural population zones and the urban size classes of towns.

2.15. *Age distribution* : As compared to Census 1951, the population age distributions obtained from the various NSS rounds show a higher proportion of population in the age group 0-14 and a lower proportion in the age group 65-above. This disparity between the Census and NSS age distributions cannot be explained by the exclusion of non-household population in the NSS or by differential bias in age reporting between the Census and the NSS. Missing of persons in tender ages by the Census is indicated. In the NSS, apart from listing of detailed demographic

particulars of the household members. A good deal of other auxiliary information is also collected about them, so that by association with such auxiliary information the chances of persons being missed are minimised.

2.16. According to NSS, about 49.7 per cent of the population are in the age group 0-14, 44.9 per cent in the age group 15-44, 11.9 per cent in the age group 45-64 and 2.4 per cent in the age group 65 above. In the earlier three age groups, the sex ratio (taken in this Report as the number of males per 100 females) is higher, but the position is reversed in the age group 65 above. As compared to the more developed countries, a much higher proportion of population is in the preparatory age group 0-14 in India. This is typical of the less developed countries and involves a proportionately bigger investment and depreciation in human capital. In the rural sector again, comparatively large concentration of persons in the age group 0-14 is observed. Against 41.2 per cent of the population below age 15 in the rural sector, only 38.0 per cent appear in the urban. In the working age group 15-64, the proportions of male population are 56.0 and 60.6 per cent in the rural and urban sectors respectively. Among the rural population zones, the minimum proportion of population in the tender ages 0-11 is observed in the south and the maximum in north-west zone. The big cities return the maximum proportion of males in the working age group.

2.17. *Economic status and marital status*: Earners and earning dependants constitute about 45.3 per cent of the population, their sex-wise distribution being 58.8 per cent for males and 31.4 per cent for females. While the proportion of earners is slightly lower in the urban sector than in the rural, the proportion of earning dependants in the urban sector is less than half of that in the rural sector. A good deal of difference in the proportion of earning dependants is observed between the Census and the NSS, apparently from classification of a substantial proportion of unpaid household labour, especially females, as non-earning dependants in the Census. The non-earning dependants preponderate among single persons; this is naturally tied up with age. In the rural sector, a markedly higher proportion of female earning dependants is registered in all the three marital status groups; this is explained by the greater opportunities for participation in household enterprise available in the rural sector. It is interesting that the proportion of female earners reported among the married in the rural sector was about double of that in the urban; but in the widowed marital status there was hardly any rural-urban differential in the proportion of earners. The proportion of earners among females was again much higher in the widowed marital status as compared to the married one.

2.18. *Labour force*: In what follows, persons who furnish the supply of labour for the production of goods and services, whether as employers, own account workers, employees or unpaid household labour, that is the gainfully employed, and the unemployed who are willing to be included in any of the above four categories will be taken to constitute the labour force. The data on the gainfully employed population obtained from the NSS were compared with those built up from Census

1951 results. Except for urban males, the NSS proportions of gainfully employed were higher than the Census. Of the total population, according to the NSS, 44.4 per cent in all India combined sector, 45.9 per cent in the rural and 39.2 per cent in the urban sector, are in the labour force. Of the males, about 58.5 per cent in all India, 59.0 per cent in the rural and 55.4 per cent in the urban sector, and 41.1 per cent females, 29.7 per cent in all India, 32.3 per cent in the rural and 15.0 per cent in the urban sector, are in the labour force.

2.19. Considerable variations in the labour force proportions are observed between the rural population zones and the urban size classes of towns. While 56.8 to 59.6 per cent of males are in the labour force in the other population zones, a distinctly higher proportion, about 62.4 per cent of males appear in the labour force in central zone. In the urban sector, the proportion of males in the labour force remains more or less steady in the different size classes of towns, but was significantly higher in the big cities. For females, the proportions in the labour force are more spread out, rural central zone having the highest proportion 44.9 per cent, and north zone the lowest 25.9 per cent. The female labour force proportion falls very markedly by urban size class, from 20.4 per cent for towns with population below 15 thousand to 7.2 per cent in big cities. The proportion of male employees increases sharply in big cities and proportion of female employees generally decreases over the size classes of towns.

2.20. The proportion of unemployed population, especially those seeking employment for the first time, is seen generally to decrease from NSS 6th to 7th round. These rounds were not specially designed for unemployment surveys, and the unemployed proportions brought out should be taken with a good deal of reserve.

2.21. *Labour force participation in age groups*: In all-India combined sectors, about 9.9 per cent of the population in the age group 0-14, 12.5 per cent of males and 7.1 per cent of females, are in the labour force, urban labour force participation by this preparatory age group was less than half the rural. In the young adult age group 15-44, about 70.8 per cent of the total population, 92.4 per cent of males and 48.5 per cent of females, and in the late adult age group 45-64 about 65.3 per cent of the population, 90.4 per cent of males and 38.8 per cent of females, appear in the labour force. The labour force proportion falls to 31.6 per cent in the old age group 65-above, 53.2 per cent for males and 12.3 per cent for females. The proportion of females in the labour force is higher in India than in the more developed countries; but this is due to the more extensive participation of females as unpaid household labour.

2.22. *Average age and duration by activity status*: For the gainfully employed, particularly among males, the average present age in each activity status is slightly higher in the urban sector than in the rural. Among the gainfully employed, the employers and own account workers have higher average ages (42.4 and 37.5 years respectively) than employees (31.6 years) and the unpaid household labour (26.4 years) the lowest. The average age of family members in domestic work is



much higher for females (29.6 years) than for males (18.1 years), which reflects the essential difference between the sexes in the nature of participation in domestic work.

2.23. For all gainfully employed persons, the average duration in the current status is 13.9 years, employers having average duration of 16.8 years, own account workers 17.3 years, employees 12.2 years, and the unpaid household labour 10.8 years. The duration in each activity status is slightly lower in the urban than in the rural sector. Female employees and unpaid household labour have higher average durations than males, indicating perhaps not so much of earlier entry into the labour force as greater immobility. Female employers and own account workers have, however, lower average durations. For all gainfully employed persons, the average age at entry in the current activity status, taken as the difference between average present age and average duration in the status, is 19.0 years for males and 18.1 years for females. Employers have the highest average age of entry (25.6 years), own account workers (20.2 years), employees (19.4 years) and unpaid household labour the lowest (15.6 years).

2.24. *Working life expectancy*: The working life expectancy was calculated at six typical ages on the basis of Census 1951 life table mortality and NSS age specific labour force proportions. It is seen that an Indian male aged 15, having a total expectation of future life of 36.2 years, may expect a further working life of 32.6 years only and males aged 65 with total expectation of 8.2 years of life, had an expectation of 4.4 years of working life. As against this, a female aged 15 with a total expectation of future life of 36.6 years could be expected to be in the labour force for another 16.1 years; and a female aged 65 with a total expectation of life of 9.3 years would be expected to be in the labour force for one year more only. The altogether different pattern for females probably results from the different nature of participation in and general loose attachment with the labour force.

2.25. *Industry and occupation*: The industry-occupation of each gainfully employed person was taken in detail in the NSS schedule. For convenience of presentation the individual industries and occupations were, however, suitably grouped later at the analysis stage. For the rural sector, the ordering of the industry groups adopted, in regard to the employment, is (1) production of cereals (76.6 per cent), followed by (2) forestry, fishery, livestock (5.2 per cent), (3) professional services, (4) other manufacturing, and (5) trade and commerce (2.3 per cent). Similar ordering of the industries for the urban sector is (1) production of cereals (19.9 per cent), (2) professional services (15.4 per cent), (3) trade and commerce (14.0 per cent), followed by (4) manufacture of textiles and (5) other manufacturing. In the rural sector, the employed females show a slightly different pattern with higher proportions of employment in production of cereals and manufacture of textiles.

2.26. For the rural sector, the ordering of the occupation groups adopted, in regard to the proportion of persons following them, is (1) cultivators (46.0 per cent), (2) agricultural labour (22.5 per cent), followed by (3) forestry, fishery, livestock workers, and (4) share-croppers (4.8 per cent). Similar ordering of occupations

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For the urban sector, is (1) operatives and artisans (15.0 per cent), (2) administrative and technical workers (11.6 per cent), (3) agricultural labour (10.8 per cent), followed by (4) peons, cleaners, scavengers, (5) unskilled labour and cultivators, and (6) retailers (7.1 per cent). The diversification and wider spread of the gainfully employed in different branches of the economy in the urban sector are quite obvious. A comparatively high proportion of agricultural labour is reported among employed females in both the sectors. In the rural sector, of the occupation groups adopted, agricultural labour accounts for the highest proportion of the gainfully employed persons in south zone; the proportion of agricultural labour is lowest in north-west zone. This proportion decreases from 14.8 per cent in towns with population below 15 thousand to 0.3 per cent in the big cities. In the urban sector, administrative and professional services claim from 23.2 per cent of the gainfully employed in towns with population below 15 thousand to 49.1 per cent in the big cities.

2.27. The occupational distribution within the leading industry groups is also of interest. In the rural sector, of the persons engaged in the production of cereals, 61.3 per cent are cultivators, 26.7 per cent agricultural labour and 6.2 per cent share-croppers. In the urban sector, of the persons employed in professional services, 23.3 per cent are washermen, barbers, cooks, 20.9 per cent unskilled labour, 17.8 per cent peons, cleaners, scavengers, 16.1 per cent on administrative and technical jobs, 9.9 per cent in teaching and 5.8 per cent in medical work.

2.28. *Days of work* : For all gainfully employed, the average days of work were about 18 a month in the rural and 23 in the urban sector, being higher for males than for females. In the rural sector, the agricultural labour had in a month a distinctly lower number of days of work in the primary occupation (14 days) as compared to the share-croppers, cultivators and farmers (18-20 days). In the urban sector, while the agricultural labour had the same lowest number of average days of work (14 days) in the primary occupation, the administrative services had the highest average days of work (25 days). In the rural sector, as between zones, the highest number of total days of work was reported by north zone (26 days), the total days for other zones varying from 20 to 24 days. In the urban sector, the variation in the total days of work was smaller, ranging from 23 days in towns with population below 15 thousand to 25 days in the big cities.

2.29. Of all the gainfully employed, 55.0 per cent in the rural and 78.9 per cent in the urban sector had 20 or more days of work a month, the proportion for males was higher, 64.2 per cent in rural and 82.9 per cent in the urban sector. Of persons in administrative and professional services, 92.7 per cent reported 20 or more days of work in the urban sector. Of the gainfully employed, 43.6 per cent in the rural and 62.0 per cent in the urban sector had 25 or more days of work a month.

2.30. Taking all gainfully employed persons, less than 10 days' work a month was reported by 26.7 per cent in the rural sector and 9.7 per cent in the urban sector; this points to a basic difference in the pattern of employment between the rural and urban sectors. Similar difference is observed between the sexes; as against 41.0

per cent of the rural females and 21.1 per cent of the urban females, only 18.4 per cent of the rural males and 6.7 per cent of the urban males, among the gainfully employed, reported less than 10 days of work a month. The agricultural labour showed a uniformly high proportion with less than 10 days of work a month, 36.8 per cent in the rural and 31.9 per cent in the urban sector. Otherwise the urban sector generally showed lower proportions with less than 10 days of work a month for the different occupation groups, the administrative and technical personnel, in this sector, for example, had only 3.3 per cent in this category.

2.31. For each days of work group in the primary occupation, the days of work in the secondary occupation are fewer in the urban sector as compared to the rural sector, also fewer for females as compared to males. The average days of work a month in subsidiary occupations were 1.4 in the rural and 1.5 in the urban sector. The very restricted scope available to persons in administrative and technical jobs to engage in subsidiary occupations was reflected in the addition of only one day of work spent on subsidiary occupations in their case as against five days in the case of cultivators.

2.32. *Intensity of employment* : Taking all the occupations together, 69.4 per cent in the rural sector and 78.4 per cent in the urban sector reported full intensity of employment. It is important to note that in the rural sector a substantially higher proportion reported full intensity of employment than that reporting 20 or more days of work a month, while in the urban sector the two proportions were of the same level. This clearly points to the wide gap in the concepts of what constitutes full employment between the rural and urban sectors.

2.33. Of all employed persons in the rural sector, 12.8 per cent had intensity of employment quarter or less, 9.2 per cent among males and 20.2 per cent among females. As compared to this, in the urban sector, only 6.4 per cent of all employed persons, 5.5 per cent among males and 10.9 per cent among females, had intensity of employment quarter or less. In the rural sector, occupation group manufacturer of food products showed the maximum proportion with intensity of employment quarter or less, and the farmers the minimum.

2.34. *Reasons for under-employment* : An analysis, by the reasons of under-employment, of those reporting less than full intensity of employment, showed that the reasons (1) lack of materials and equipment ; (2) fall in demand ; (3) slack, and (4) off seasons accounted for 48.7 per cent and 52.5 per cent of under-employment in the rural and urban sectors respectively. Own illness similarly occasioned 9.0 and 8.7 per cent, and other reasons 42.3 and 38.8 per cent, less than full intensity of employment in the rural and urban sectors respectively. The analysis by reasons suggests that roughly half the labour time not utilised at full intensity of employment belongs to real under-employment : an assumption that the reasons did not get mixed up in concept and classification is involved, and this finding should be treated as tentative. There was no marked sex differential in regard to the reason



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own illness, but domestic reason was reported, as expected, by a higher proportion of females.

2.35. *Average monthly income.* In the rural sector, the average monthly income of the employed persons reporting any income was Rs 47. Rs 46 for males and Rs 21 for females; in the urban sector, similar average monthly income was Rs 65. Rs 72 for males and Rs 25 for females. In the rural sector, of all the occupation groups adopted, farmers return the highest monthly income (Rs 227) and agricultural labour the lowest (Rs 16); cultivators and share croppers report average incomes of Rs 79 and Rs 50 respectively. Among males in the urban sector, of the occupation groups adopted, wholesalers and financial operators (Rs 153) and those in administrative and technical work (Rs 133) have the highest income; on the other end of the scale come those in agricultural labour (Rs 19) with minimum income. The disparity in incomes was quite high between the sexes, except for the agricultural labour. For all the occupations taken together, the average income of females was 47 per cent of the average income of males in the rural sector and 35 per cent in the urban sector. Among the industry groups taken, the highest monthly income (Rs 181) was returned by production of money crops, jute and cotton; in the rural sector, in the urban sector, the highest income (Rs 104) was returned by public services.

2.36. The average monthly incomes of the gainfully employed persons were reported as Rs 37 and Rs 65 for the rural and the urban sectors respectively. Applying the respective proportions of the gainfully employed, the average monthly per capita income works out to Rs 17 in the rural sector and Rs 22 in the urban sector. These average incomes relate to principal occupations and do not include imputed values of labour not exchanged, and it should be clear from the way they are derived that they are very rough and tentative.

## CHAPTER THREE

## HOUSEHOLD SIZE

3.1. It does not appear that the all-India average household size has been changing to any significant extent in the recent past. With accelerated industrial development and urbanisation, however, changes in household size may follow the changes in economic and social structures. An examination of the household sizes in the rural and urban sectors by economic and social classes can suggest, within limitations imposed by the small number of households in certain classes, the possible future lines of change. The average household size and its distribution in regional and agglomeration class breakdowns by different household characteristics like the household religion, caste group (for Hindus only), occupation and expenditure have been discussed in this chapter.

3.2. *Definition of household*: The NSS definition of the household is similar to the Indian Census definition and has remained the same in the NSS rounds covered in this report. The NSS sampling unit household is a group of persons taking their principal meals from a common kitchen and usually living together; only those who took the principal meals with the household for at least 16 out of 30 days preceding the date of enquiry qualify to be entered as members of the household. In Census 1951, persons normally resident in the household were enumerated as household members unless they had left the messing unit 20 days prior to the Census date and were not expected to return before the Census date.

3.3. *Household size by population zones and size classes of towns*: Table (3.1) gives the average size of the household in the six population zones for rural India and in the four population size classes of towns for urban India, from NSS 1st to 4th round. The all-India average household size is of the order of 5.0, the rural household size being about 5.1 and the urban household size 4.6. The ordering of the rural population zones and the urban size classes of towns in regard to the average household size has broadly remained unchanged over the NSS rounds: north-west and west zones returned the biggest household size of about 5.3. In the urban sector, the household size shows a tendency to decline with rising size class of towns: the biggest urban household size of about 4.7 was recorded in towns with population below 15 thousand and it came down to 4.1 in the big cities.

3.4. The percentage distribution of households in household size groups, for both the rural and urban sectors from Census 1951 and NSS 4th round, is shown in Table (3.2). The Census definition of household, though similar, was not identical with the NSS definition. In the NSS, by convention, each member of a boarding house or hostel was counted as an individual household. In Census 1951 there was also recording of some multiple household-occupied houses as individual households in certain areas. The distribution of households from the Census given in Table (3.2)

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TABLE 3.1. AVERAGE SIZE OF HOUSEHOLD IN THE RURAL AND URBAN SECTORS AND THE URBAN POPULATION SIZE CLASSES OF TOWNS FROM THE FIRST FOUR NSS ROUNDS: ALL-INDIA RURAL AND URBAN HOUSEHOLDS

(NSS 1st-4th rounds)

sector	first round <sup>1</sup> October 1950- March 1951	second round <sup>2</sup> April-June 1951	third round <sup>3</sup> August- November 1951	fourth round April- September 1952
(1)	(2)	(3)	(4)	(5)
<i>rural zone:</i>				
1. north	5.27	5.42	5.18	5.09
2. east	5.36	5.33	5.37	5.02
3. south	4.98	5.16	4.82	4.99
4. west	5.47	5.33	5.41	5.31
5. central	4.98	5.04	4.82	4.79
6. north-west	5.27	5.44	5.41	5.17
7. all-India rural (number of sample households)	5.21 (16,264)	5.31 (19,876)	5.14 (5,050)	5.03 (3,254)
<i>urban size class:</i>				
8. all-India urban (number of sample households)	—	—	4.67 (1,090)	4.59 (3,658)
9. below 15,000	—	—	4.87	4.74
10. 15,000-50,000	—	—	4.78	4.55
11. 50,000-above	—	—	4.57	4.60
12. cities	—	—	4.43	4.13

<sup>1</sup> Only the rural sector was surveyed in the first two NSS rounds.

<sup>2</sup> NSS General Report No. 1 on the First Round, December 1952, p. 13.

<sup>3</sup> NSS No. 2, Tables with notes on the Second Round, December 1953, p. 25.

<sup>4</sup> NSS No. 3, Tables with notes on the Third Round, January 1954, pp. 35 and 57.

excludes West Bengal (where households were mixed up with houses), Bihar, Chandernagore, Sikkim and Hyderabad. A slightly higher household size in the rural sector and slightly lower in the urban emerge in the NSS as compared to the Census.

TABLE (3.2): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS: ALL-INDIA RURAL AND URBAN HOUSEHOLDS

(Census of India 1951<sup>1</sup> and NSS 4th round)

household size group	rural		urban		all-India	
	Census 1951	NSS 4th round	Census 1951	NSS 4th round	Census 1951	NSS 4th round
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. 1-3	33.36	31.48	37.69	39.06	34.14	32.82
2. 4-6	43.91	44.12	40.63	39.46	43.33	43.30
3. 7-9	17.02	17.66	16.12	16.18	16.85	17.40
4. 10-above	5.71	6.74	5.56	5.30	5.68	6.48
5. all sizes	100.00	100.00	100.00	100.00	100.00	100.00
6. average size	4.91	5.03	4.71	4.59	4.87	4.95

<sup>1</sup> Census of India, 1951 Volume I, Part II-A, Demographic Tables, pp. 151-2.



3.5 The NSS percentage distribution of households by household size and the average sizes of household in the urban population size classes of towns are shown graphically in Diagram (3.1).

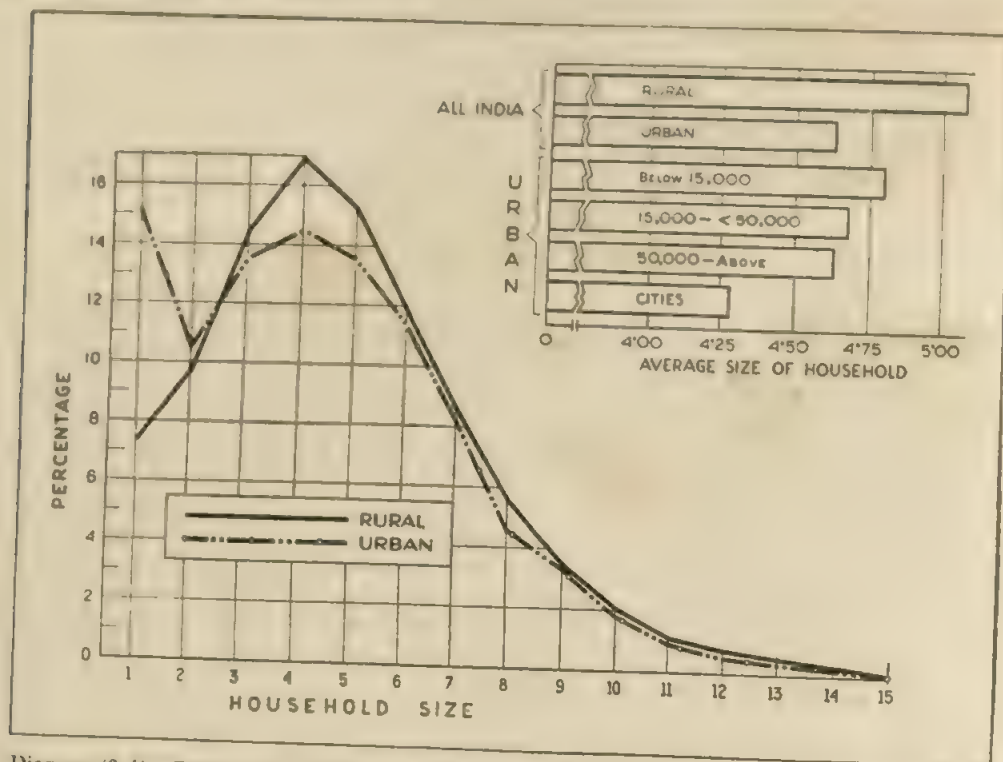


Diagram (3.1) : Percentage distribution of households by household size (NSS 4th round) and the average size of household by urban population size classes of towns (NSS 3rd and 4th round combined) : all-India rural and urban households.

Source : Table (3.2.4)3 and Table (3.1).

3.6. *Household size by household religion* : The variation in the average household size according to religion is significant and interesting, as will be seen from Table (3.3) based on NSS 4th round. The Muslim household size is generally higher. All-India Muslim households have average sizes of 5.50 in the rural and 5.01 in the urban sector, as compared to the average Hindu household sizes of 5.00 in the rural and 4.53 in the urban sector. Except in north-west and west India, where the household sizes of the two major religions are about the same, this disparity between the Hindu and Muslim household sizes runs through all the population zones and size classes of towns. In the cities, however, the average Muslim household size was much smaller than that of the Hindu households. In the rural sector, Sikh households showed an average size of 5.13, nearly the same as the Hindu. The average sizes of Christian households are 4.63 and 4.40 in the rural and urban sector respectively. Thus for Christian households, the average sizes as well as the difference between the average sizes in the two sectors are much smaller as compared to other major religions. The number of sample households of other religions was too few.

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TABLE 3.7. AVERAGE SIZE OF HOUSEHOLD BY MAJOR POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS : ALL-INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round)

sector	religion					all religions
	Hinduism	Islam	Sikhism	Christianity	others	
1. rural zone :						
2. north	5.04	5.39	2.50	4.00	3.39	5.09
3. east	5.02	5.18	—	4.30	5.23	5.02
4. south	4.92	6.52	1.00	4.82	4.61	4.99
5. west	5.34	5.33	4.89	3.24	4.31	5.31
6. central	4.80	4.98	—	3.78	5.30	4.79
7. north-west	5.16	5.06	5.22	6.14	5.55	5.17
8. all-India rural	5.00	5.50	5.13	4.63	5.16	5.03
9. (number of sample households)	(7,324)	(551)	(132)	(216)	(58)	(9,994)
10. urban size class :						
11. all-India urban	4.53	5.01	3.98	4.40	4.78	4.59
12. (number of sample households)	(3,010)	(561)	(44)	(239)	(43)	(3,888)
13. below 15,000	4.63	5.32	4.22	5.06	5.00	4.74
14. 15,000—<50,000	4.58	5.09	2.91	3.20	3.17	4.55
15. 50,000—above	4.55	5.10	4.09	5.02	5.67	4.69
16. cities	4.15	3.49	5.00	4.52	4.51	4.13
17. all-India	4.93	5.34	4.99	4.56	5.08	4.95
18. (number of sample households)	(10,334)	(1,115)	(176)	(446)	(94)	(12,172)

3.7. *Household size by caste groups among Hindus* : The average size of Hindu households for the four caste groups—upper, middle, lower and scheduled—is shown in Table (3.4). The upper castes were defined as those who, according to custom, used the sacred thread, the middle as those from whom the Brahmins take water by tradition and the lower as the other castes who were not scheduled. For all-India rural and urban combined, middle caste and lower caste households have comparatively bigger sizes of 5.12 and 4.96 respectively, as compared to upper caste (4.78) and scheduled caste (4.71) households. This pattern generally holds in the population zones. In the rural sector as a whole, middle caste households have the biggest household size of 5.27. Except in north and central zones, where lower and upper caste households respectively reported the biggest household size, middle caste had the biggest household size in the other population zones. For each caste group, the average rural household size is seen to be higher than the corresponding urban household size. In the urban sector, upper and lower castes have the biggest household size of 4.62; in towns with population 15–50 thousand and in the big cities upper castes claim the biggest household size while lower castes claim the biggest household size in the other two population size classes of towns.

TABLE 3.4. AVERAGE SIZE OF HINDI HOUSEHOLD BY CASTE GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS. ALL INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round)

sector	number of sample households	caste				all castes
		upper	middle	lower	scheduled	
1	2	3	4	5	6	7
<i>rural zone</i>						
1. east	1,220	4.61	5.08	5.51	4.93	5.04
2. west	1,826	5.10	5.40	4.82	4.71	5.02
3. south	1,240	4.19	5.40	5.04	4.51	4.92
4. east	1,086	4.51	5.57	5.39	5.02	5.34
5. central	1,180	5.31	5.08	4.72	4.81	4.80
6. north-west	772	5.04	5.34	5.12	4.98	5.16
7. all-India rural	7,324	4.84	5.27	5.01	4.77	5.00
<i>urban size class :</i>						
8. all-India urban	3,010	4.62	4.49	4.62	4.21	4.53
9. below 15,000	604	4.54	4.67	4.70	4.45	4.63
10. 15,000—<50,000	779	5.14	4.79	4.44	4.19	4.58
11. 50,000—above	1,048	4.52	4.40	4.82	4.21	4.55
12. cities	579	4.46	3.96	4.43	3.68	4.15
13. all-India	10,334	4.78	5.12	4.96	4.71	4.93

3.8. *Household size by household occupation :* Table (3.5) shows the average size of household in the rural and urban sectors for 13 household occupation groups, from NSS 4th round. In the rural sector, cultivators return the biggest household size of 5.81; in the urban sector also they return the biggest household size of 6.23, but here the sample size was too small to warrant any firm conclusion. Among the agricultural occupation groups, the comparatively small household size of farmers (4.44) and of agricultural labour (4.26) may be noted. The group administrative and professional services return the household size of 4.46 in the rural and 4.70 in the urban sector. Among the non-agricultural occupation groups, trade and commerce show the biggest household size (5.24) and manufacturers of food products the smallest (4.17), leaving out of consideration occupation group mining for which again the sample size is too small.

3.9. The average size of household is 5.03 in the rural sector and 4.59 in the urban sector. The smaller average household size in the urban sector than in the rural could be attributed more to the changed occupational structure of the urban sector than to the reduction of household size occupation by occupation.



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It will be noticed that farmers and cultivators have bigger household sizes in the urban sector than in the rural sector while this position is reversed for agricultural labour and forestry, fishery, livestock workers. Share-croppers have household sizes of the same order in the two sectors. As for non-agricultural occupations, allowing for small sample sizes in administrative and professional services and trade and commerce, household sizes in the urban sector are bigger than in the rural.

TABLE (3.5): AVERAGE SIZE OF HOUSEHOLD BY HOUSEHOLD OCCUPATION GROUPS  
ALL INDIA RURAL AND URBAN SAMPLE HOUSEHOLDS

(NBS 4th round)

Household occupation	rural		urban		all-India	
	number of sample household-holds	average size of household	number of sample household-holds	average size of household	number of sample household-holds	average size of household
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. farmer	626	4.42	114	4.79	740	4.44
2. cultivator	3,336	5.81	102	6.22	3,438	5.91
3. share-cropper	538	5.52	47	5.56	585	5.52
4. agricultural labour	1,515	4.27	107	4.14	1,622	4.26
5. forestry, fishery, livestock workers	304	4.73	100	4.57	304	4.70
6. mining	39	3.43	4	3.50	33	3.44
7. manufacturer of food products	73	3.85	84	4.71	157	4.17
8. manufacturer of textiles	94	4.61	319	4.61	413	4.61
9. other manufacturers	175	4.93	132	5.02	307	4.95
10. construction and sanitary services	124	4.71	210	4.43	334	4.58
11. trade and commerce	202	5.17	549	5.33	841	5.24
12. transport and communication services	148	4.88	374	4.21	522	4.52
13. administrative and professional services	672	4.46	1,396	4.70	2,068	4.58
14. all household occupations <sup>1</sup>	8,284	5.03	3,888	4.70	12,172	4.90

<sup>1</sup> Includes occupations not listed.

3.10. *Household size by household expenditure* : The average household sizes in different household monthly expenditure groups, for the six rural population zones and the four urban size classes of towns, have been given in Table (3.8.4) of Appendix O. It was observed that for the classifications studied, the household size varied systematically over the expenditure levels, increasing with the household expenditure. In the rural sector, the average household size increased from 3.18 in the household expenditure group Rs.1-50 to 12.24 in the expenditure group Rs.501-above. In the urban sector, it increased from 2.36 in the expenditure group Rs.1-50 to 9.33 in the expenditure group Rs.501-above.

## CHAPTER FOUR

## HOUSEHOLD OCCUPATION AND RELIGION

4.1. Household characteristics of occupation and religion have been discussed in this chapter. While the household religion will generally be the religion of the persons who belong to the household, the household and individual occupation could differ; the degree of association between the household occupation defined in the NSS round as the principal occupation of the principal earner of the household and the occupations of the other employed members of the household has also been examined in this chapter. The occupational distribution of persons has been more fully dealt with in a later chapter. The occupations have been grouped for convenience in this report<sup>1</sup>; the weight which has come to be attached to any occupation group is necessarily a function of this grouping.

4.2. *Distribution of households by occupation*: The percentage distribution of the estimated number of households by household occupation groups, for the six rural population zones and the four urban population size classes of towns, is shown in Table (4.1) from NSS 11th round. As expected, considerable rural-urban disparity exists in the distribution of households by the occupation groups. In the rural sector, cultivators claim the major proportion (39.98 per cent) of the households, agricultural labour coming next with 19.07 per cent; in the urban sector, on the other hand, administrative and professional services claim 34.28 per cent of households, while trade and commerce come next with 13.76 per cent. In all-India, 33.45 per cent of households have household occupation cultivator, 16.25 per cent agricultural labour and 12.55 per cent administrative and professional services. The pattern of distribution of households by occupation is broadly similar in the six rural population zones, though in south India the gap between the proportions of cultivator and agricultural labour households very nearly closes.

4.3. In the urban sector, as we move from the small-size towns to the big cities, the proportion of households with household occupation administrative and professional services increases from 26.70 per cent to 45.49 per cent; similarly, the proportion of households with occupation transport and communication services increases regularly from 6.16 per cent in the small-size towns to 12.65 per cent in the big cities. But household occupation manufacturer of textiles shows an irregular pattern over the size classes of towns: so does household occupation trade and commerce, which increases from 11.87 per cent in small-size towns to 16.59 per cent in middle-size towns with population 50 thousand-and-above, but drops to 12.71 per cent in the big cities. The different population size classes of towns thus have household occupation patterns peculiar to them.

<sup>1</sup> A note on the industry-occupation classification and the broad groupings resorted to in this report is given in Appendix 4.

TABLE (4.1) : PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD OCCUPATION GROUPS IN THE SEVEN ZONE CATEGORIES ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS - ALL INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round)

household occupation	rural zone							urban size class						all India
	north		south		central		all India rural	15,000 < 50,000		50,000 > 1,00,000		all India urban		
	(2)	(3)	(4)	(5)	(6)	(7)		(9)	(10)	(11)	(12)			
(1)							(8)					(13)	(14)	
1. farmer	7.45	6.76	8.16	8.44	8.51	7.09	7.64	1.26	1.80	1.76	1.69	1.78	1.84	
2. cultivator	53.42	38.01	25.60	43.69	42.25	44.69	39.96	3.09	8.44	2.70	0.69	0.13	23.45	
3. share-cropper	2.09	8.39	6.34	6.87	6.01	9.09	6.36	1.33	2.88	2.13	0.25	—	8.38	
4. agricultural labour	16.04	19.93	27.27	16.91	17.15	8.66	19.07	4.74	7.11	4.18	0.90	—	16.20	
5. forestry, fishery, livestock workers	1.65	2.18	4.47	2.43	2.26	1.62	1.35	0.60	4.18	0.46	1.64	1.80	1.40	
6. all agricultural occupations	80.65	75.27	71.84	77.34	76.18	71.15	75.90	11.80	28.70	16.10	0.61	1.14	64.80	
7. mining	—	0.40	—	0.54	0.61	0.30	0.23	0.11	0.23	0.17	—	—	0.25	
8. manufacturer of food product	0.58	1.33	0.49	0.41	0.44	0.48	0.81	0.02	1.03	1.11	1.84	0.69	1.40	
9. manufacturer of textiles	1.45	0.94	1.04	1.07	0.98	1.80	1.11	0.02	3.40	0.08	1.11	1.00	1.25	
10. other manufactures	1.80	2.43	1.57	2.09	2.07	2.42	2.06	0.04	3.40	3.33	0.11	0.40	1.25	
11. construction and sanitary services	1.35	0.78	1.46	1.39	1.11	3.10	1.37	3.30	6.09	4.37	5.03	4.03	2.00	
12. trade and commerce	2.07	1.42	4.07	0.75	1.84	4.87	1.66	0.13	11.87	10.00	0.00	0.11	1.00	
13. transport and communication services	0.98	1.64	3.59	1.03	0.33	2.92	1.79	0.00	0.00	0.00	0.00	0.00	0.00	
14. administrative and public services	6.40	7.09	10.40	8.06	6.70	8.43	1.87	16.18	0.00	0.00	0.00	0.00	10.00	
15. others	4.90	5.49	6.05	4.97	10.11	4.57	7.90	7.90	7.90	7.90	7.90	7.90	7.90	
16. all non-agricultural occupations	19.35	24.71	28.16	22.66	23.87	28.57	24.30	30.77	11.87	30.40	23.43	23.43	30.40	
17. all household occupations	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
18. (number of sample households)	1,344	2,122	1,435	1,172	1,441	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	



TABLE (4.2): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED PERSONS IN OCCUPATION GROUPS BY HOUSEHOLD  
OCCUPATION GROUP: ALL INDIA RURAL SAMPLE PERSONS  
(NSS 4th round)

household occupation	number of sample persons	individual occupation <sup>1</sup>													total
		1	2	3	4	5	6	7	8	9	10	11	12	13	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. farmer	1,170	76.58	4.79	—	3.42	2.91	—	0.34	1.03	0.34	0.06	0.34	0.34	9.83	100.00
2. cultivator	9,524	8.46	83.30	0.11	2.86	2.57	0.02	0.22	0.56	0.11	0.09	0.22	0.15	1.24	100.00
3. share-cropper	1,423	—	1.12	87.50	6.61	1.83	0.14	0.42	0.49	0.07	0.14	0.25	0.28	1.05	100.00
4. agricultural labour	3,293	0.18	1.67	0.91	89.86	3.19	0.03	0.27	0.61	0.18	0.39	0.46	0.15	2.10	100.00
5. forestry, fishery, livestock workers	467	0.21	3.43	1.93	12.42	74.09	—	0.43	1.93	1.28	—	1.71	1.07	1.50	100.00
6. mining	52	—	11.54	1.92	7.69	1.92	71.16	—	—	—	—	—	—	5.77	100.00
7. manufacturer of food products	133	—	0.75	2.26	4.31	3.01	—	84.96	—	—	—	1.50	2.26	0.75	100.00
8. manufacturer of textiles	211	0.95	3.79	0.95	3.79	1.90	—	0.47	86.26	0.47	—	—	0.95	0.47	100.00
9. other manufacturers	401	—	2.24	—	14.96	0.75	0.25	0.50	0.75	77.56	1.00	—	0.50	1.49	100.00
10. construction and sanitary services	263	0.38	4.56	2.28	4.56	4.56	—	0.38	—	0.76	80.24	0.38	0.76	1.14	100.00
11. trade and commerce	521	0.58	5.95	0.38	4.03	1.92	—	0.38	0.19	0.38	0.19	80.81	0.58	4.61	100.00
12. transport and communication services	271	—	5.90	1.48	12.18	1.48	—	2.58	2.58	0.37	0.74	1.48	66.05	5.16	100.00
13. administrative and profes- sional services	1,456	0.76	5.84	0.82	20.12	3.71	—	0.34	0.82	0.21	0.55	0.69	0.21	65.93	100.00

<sup>1</sup> The description of occupation for any number is the same as given against the corresponding row number.

TABLE (4.3) : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED PERSONS IN OCCUPATION GROUPS BY HOUSEHOLD OCCUPATION GROUP : ALL-INDIA URBAN SAMPLE PERSONS  
(NSS 4th round)

household occupation (1)	number of sample persons (2)	individual occupation <sup>1</sup>												
		1	2	3	4	5	6	7	8	9	10	11	12	13
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. farmer	190	63.63	1.05	—	—	0.53	—	—	—	—	—	4.74	—	30.60
2. cultivator	250	—	90.60	—	2.40	1.60	—	—	0.40	0.40	1.60	1.20	0.80	1.00
3. share-cropper	108	—	2.78	72.22	7.41	0.93	—	1.85	1.85	—	—	4.63	4.63	3.70
4. agricultural labour	223	0.45	—	—	86.55	1.83	—	—	0.45	0.45	1.35	1.35	—	100.00
5. forestry, fishery, livestock workers	194	—	—	0.51	6.19	79.38	—	0.52	0.51	1.03	1.03	0.51	0.51	100.00
6. mining	6	—	—	—	—	—	100.00	—	—	—	—	—	—	100.00
7. manufacturer of food products	157	—	—	—	2.55	—	—	79.63	1.27	1.91	—	3.82	0.64	10.19
8. manufacturer of textiles	606	0.43	0.43	—	1.82	0.43	—	0.43	81.70	7.90	0.70	0.70	0.70	100.00
9. other manufacturers	206	0.49	—	—	3.14	0.97	—	0.49	4.35	75.24	0.97	0.97	0.97	100.00
10. construction and sanitary services	370	0.27	0.27	—	3.15	1.62	—	0.80	0.80	0.80	26.19	1.62	1.62	100.00
11. trade and commerce	917	0.44	—	—	0.87	1.96	—	0.76	1.96	0.76	0.80	0.80	0.80	100.00
12. transport and communication services	362	—	0.33	—	3.94	0.74	—	0.33	0.33	0.74	1.66	0.74	0.74	100.00
13. administrative and professional services	2,170	0.92	0.37	0.18	0.17	0.74	—	0.83	1.67	0.41	1.42	0.83	1.67	100.00

<sup>1</sup> The description of occupation for very minor occupations is given in the appendix.

4.4. *Household occupation and individual occupation—the Index of Inertia*

The household occupation has naturally a very high degree of association with the occupation of the gainfully employed individuals in the household. Table (4.2) for the rural sector and Table (4.3) for the urban sector demonstrate the degree of association for different household occupation groups. In the rural sector, for household occupation groups cultivator, share-cropper, agricultural labour, manufacturer of food products, manufacturer of textiles, construction and sanitary services, more than 80 per cent of the employed persons in the household have the same occupation: the proportion is seen to be highest (near about 90 per cent) for agricultural labour households. Leaving out of account mining for which the sample size was inadequate, in the urban sector, for the household occupation groups

TABLE (4.4) INDEX OF INERTIA<sup>1</sup> BY HOUSEHOLD OCCUPATION: ALL-INDIA RURAL AND URBAN SAMPLE PERSONS

(NSS 4th round)

household occupation (1)	rural		urban	
	number of sample households (2)	index of inertia (3)	index of inertia (4)	number of sample households (5)
1. farmer	626	49.63	9.21	114
2. cultivator	3,336	74.43	83.11	102
3. share-cropper	538	79.89	50.82	47
4. agricultural labour	1,515	81.21	74.14	107
5. forestry, fishery, livestock workers	204	53.99	57.45	100
1-5. all agricultural occupations	6,219	74.23	60.81	470
6. mining	29	34.78	100.00	4
7. manufacturer of food products	73	66.67	56.16	84
8. manufacturer of textiles	94	75.21	66.31	319
9. other manufacturers	175	60.18	31.08	132
10. construction and sanitary services	124	62.59	42.51	210
11. trade and commerce	292	56.33	48.91	549
12. transport and communication services	148	25.20	31.91	374
13. administrative and professional services	672	36.73	66.54	1,396
6-13. all non-agricultural occupations	1,607	47.44	56.50	3,068
all household occupations	7,826	70.22	57.35	3,538

<sup>1</sup> The Index of Inertia has been defined as  $I_i = \frac{e_{ii} - e'_i}{e_i - e'_i} \cdot 100$ ,

where  $e_{ii}$  = number of employed persons with both individual and household occupation  $i$ ;

$e'_i$  = number of principal earners with household occupation  $i$ ; and

$e_i$  = total number of employed persons with household occupation  $i$ .

For the sub-total and total rows the Indices of Inertia have been defined as:

$$I_{ag} = \frac{\sum_{i=1}^5 (e_{ii} - e'_i)}{\sum_{i=1}^5 (e_i - e'_i)} \cdot 100, \quad I_{n-ag} = \frac{\sum_{i=6}^{13} (e_{ii} - e'_i)}{\sum_{i=6}^{13} (e_i - e'_i)} \cdot 100, \quad I_{tot} = \frac{\sum_{i=1}^{13} (e_{ii} - e'_i)}{\sum_{i=1}^{13} (e_i - e'_i)} \cdot 100$$

$I_{ag}$ ,  $I_{n-ag}$  and  $I_{tot}$  are the Indices for all agricultural occupations, all non-agricultural occupations and all occupations respectively.



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cultivator, agricultural labour, forestry, fishery, livestock workers, manufacturer of food products and textiles, trade and commerce and administrative and professional services. 80 per cent or more of the employed persons in the household have the same occupation as the household occupation for farmer households the proportion was, on the other hand, lowest, it being a little above 60 per cent.

4.5. For measuring the occupational immobility within the household, an Index of Inertia, taken as the percentage ratio of persons having the same occupation as the household occupation to the total number of employed persons for any particular household occupation group leaving out the principal earner of the household whose occupation determined the household occupation, was calculated. This Index could have the theoretical range 0-100. An over-all Index of Inertia could also be calculated for all the occupations taken together. The Indices of Inertia for different household occupation groups in the rural and urban sectors have been shown in Table (4.4).

4.6. The over-all inertia is higher by 13 points (70 as against 57) in the rural sector than in the urban. For the agricultural occupations, the inertia is seen to be about 13 points higher in the rural sector than in the urban sector, but lower by 9 points for the non-agricultural occupations. As between the different occupation groups, agricultural labour, share-croppers, and cultivators among the agricultural occupations, and the manufacturers of textiles and manufacturers of food products among the non-agricultural occupations show the highest inertia, higher Indices are thus shown by occupations often found in household enterprises, e.g., agriculture and the latter two groups. The lowest inertia is shown by farmers among agricultural occupations, and by transport and communication services among the non-agricultural occupations. Administrative and professional services show the comparatively low Index of 37 in the rural sector, but a high Index of 67 in the urban sector. Rural and urban characteristics of household composition in regard to occupation appear to be quite markedly reflected in these Indices of Inertia. Further interesting studies are possible in the line, for instance, assessing the inertia for the employed 'surplus' members of the household after allowing for the essential requirement of household labour in household occupations; an analysis of inertia by activity status classes will be relevant to this.<sup>2</sup>

<sup>2</sup> It may also be of interest to note here the results of an investigation done to find out the extent of livelihood class shift of women before and after marriage, the livelihood class being taken as the household occupation. In West Bengal Special Demography Study, designed to examine different methodological problems that arise in demographic surveys, conducted in 71 villages, 26 town-blocks and 14 city-blocks in West Bengal in April-May 1954 with the Indian Statistical Institute experimental field staff, information on the occupation of the household to which a woman belonged before and after marriage was also collected. Out of the total of 39 current marriages recorded in the survey, about eleven could be expected to be performed within the same livelihood classes on the hypothesis of no association; the observed number was 23 as against this. Marriage within the class cultivator mainly owning land were 15 in number, against an expected nine on the hypothesis of independence.

4.7. It is evident from the formulation of the Index of Inertia<sup>2</sup> that the value of the Index depends on the system of grouping of the occupations. Table (4.5) gives the Index for the rural and the urban sectors obtained from the same data as for Table (4.4) but with only two occupation divisions—agricultural and non-agricultural. The Indices for these two divisions in this table are higher than the corresponding Indices in Table (4.4). This is to be expected, as with the grouping of occupations into broader divisions, the intra-division mobility gets masked, and the inertia is correspondingly increased.

TABLE 4.5 INDEX OF INERTIA FOR TWO BROAD HOUSEHOLD OCCUPATIONS: ALL-INDIA RURAL AND URBAN SAMPLE PERSONS  
(NSS 4th round)

household occupation	rural		urban	
	number of sample households	index of inertia	index of inertia	number of sample households
(1)	(2)	(3)	(4)	(5)
1. agricultural	6,219	93.69	71.31	470
2. non-agricultural	1,607	56.26	89.38	3,068
3. all occupations	7,826	88.09	85.82	3,538

4.8. Individual incomes have been examined in relation to occupations in a later chapter. It will be useful to mention here the broad dimensions of household expenditure from NSS 4th round, details of which are given in Table (4.7.4) of Appendix 0. The median monthly household expenditure came out as Rs. 84.09 for all-India, Rs. 81.81 in the rural and Rs. 95.20 in the urban sector. In the rural sector, the minimum median household expenditure of Rs. 58.21 was

<sup>2</sup> In Table (4.5) the corresponding formulae are

$$I'_{ag} = \frac{\sum_{i,j=1}^5 e_{ij} - \sum_{i=1}^5 e'_i}{\sum_{i=1}^5 (e_i - e'_i)} \quad 100 \geq I_{ag}$$

$$I'_{n-ag} = \frac{\sum_{i,j=6}^{13} e_{ij} - \sum_{j=6}^{13} e'_j}{\sum_{j=6}^{13} (e_j - e'_j)} \quad 100 \geq I_{n-ag}$$

$$I'_{tot} = \frac{\sum_{i,j=1}^5 e_{ij} + \sum_{i,j=6}^{13} e_{ij} - \sum_{i=1}^{13} e'_i}{\sum_{i=1}^{13} (e_i - e'_i)} \quad 100 \geq I_{tot}$$

where  $I'_{ag}$ ,  $I'_{n-ag}$  and  $I'_{tot}$  are the Indices for agricultural, non-agricultural and all occupations respectively in Table (4.5) and  $I_{ag}$ ,  $I_{n-ag}$  and  $I_{tot}$  the corresponding Indices in Table (4.4).

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observed in central and the maximum (Rs. 110.00) in north-west zone. The maximum monthly household expenditure increased regularly over the size classes, it being from Rs. 79.43 in towns with population below 15 thousand to Rs. 120.88 in the big cities.

1.9. *Distribution of households by religion* The percentage distribution of the estimated number of households by religion in the six rural population zones and the four urban population size classes of towns is shown in Table 4.6 from NSS 4th round. Hindu households constitute 86.13 per cent of all households in India being 88.03 per cent and 77.35 per cent of all households in the rural and urban sectors respectively; correspondingly, there are 8.19 per cent of Muslim households in India, 6.84 per cent in the rural sector and 14.49 per cent in the urban sector. The proportion of Christian and Sikh households are 3.49 and 1.41 per cent respectively and of other faiths still lower. In the rural sector, north zone shows the highest percentage (10.79 per cent) of Muslim households. The proportion of Christian households is maximum (10.06 per cent) in south zone. In the urban sector the proportion of Muslim households is fairly constant and is of the order 15 per cent in towns but it drops down to 10.25 per cent in the cities. Hindu households have the highest proportions in rural central India and in the towns with population below 15 thousand and in the big cities.

TABLE 4.6. PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN MAJOR RELIGIONS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round)

sector	number of sample households	religion					all religions
		Hinduism	Islam	Sikhism	Christianity	others	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>rural zone :</i>							
1. north	1,344	88.72	10.79	0.13	0.07	0.29	100.00
2. east	2,122	87.78	9.12	—	1.83	1.27	100.00
3. south	1,453	84.62	5.06	0.03	10.06	0.23	100.00
4. west	1,172	92.46	5.21	1.09	0.34	0.90	100.00
5. central	1,241	95.10	3.29	—	1.43	0.18	100.00
6. north-west	952	78.29	3.79	15.62	0.14	2.16	100.00
7. all-India rural	8,284	88.03	6.84	1.49	2.90	0.74	100.00
<i>urban size class :</i>							
8. all-India urban	3,888	77.35	14.49	1.02	6.20	0.94	100.00
9. below 15,000	739	81.76	14.48	1.29	2.37	0.10	100.00
10. 15,000 — <50,000	1,002	76.83	14.77	0.93	6.80	0.67	100.00
11. 50,000—above	1,431	73.42	15.79	0.78	8.77	1.24	100.00
12. cities	716	81.34	10.25	1.40	4.78	2.23	100.00
13. all-India	12,172	86.13	8.19	1.41	3.49	0.78	100.00



4.10 *Distribution of Hindu households by caste groups*: For Hindu households, the percentage distribution of the estimated number of households by four caste groups—upper, middle, lower and scheduled—for the six rural population zones and the four urban population size classes of towns, is shown in Table (4.7) from NSS 4th round. A major portion (45.07 per cent) of Hindu households in India belongs to lower caste, 46.14 per cent in the rural sector and 39.43 per cent in the urban sector. The proportion of middle caste, scheduled caste and upper caste households come next in that order. Upper caste households are relatively more numerous in the urban sector (17.42 per cent) than in the rural (8.45 per cent).

TABLE 4.7. PERCENTAGE DISTRIBUTION OF HINDU HOUSEHOLDS BY CASTE GROUP IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS : ALL-INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round)

sector	number of sample households	caste				all castes
		upper	middle	lower	scheduled	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>rural zone</i>						
1. north	1,220	18.26	38.12	18.49	25.13	100.00
2. east	1,826	10.76	33.94	29.78	25.52	100.00
3. south	1,240	2.56	4.53	70.86	22.05	100.00
4. west	1,086	2.16	10.06	76.19	11.59	100.00
5. central	1,180	3.21	11.85	66.34	18.60	100.00
6. north-west	772	11.28	38.72	24.61	25.39	100.00
7. all-India rural	7,324	8.45	23.15	46.14	22.26	100.00
<i>urban size class :</i>						
8. all-India urban	3,010	17.42	29.53	39.43	13.62	100.00
9. below 15,000	604	14.14	28.57	42.09	15.20	100.00
10. 15,000—<50,000	779	10.27	28.59	48.47	12.67	100.00
11. 50,000—above	1,048	23.93	25.63	36.22	14.22	100.00
12. cities	579	22.37	43.08	23.32	11.23	100.00
13. all-India	10,334	9.88	24.16	45.07	20.89	100.00

4.11. A good deal of variation in the proportion of Hindu households by caste groups is observed in the rural population zones and the urban population size classes of towns. In the rural sector, lower caste households preponderate in south, west, and central zones, being of the order of 70 per cent of all Hindu households. In the remaining population zones middle caste Hindu households form the major group. The highest proportion of upper caste Hindu households appear in rural north India. Excepting the big cities where middle caste households are most numerous, lower caste households are the major group in other size classes of towns. Comparatively high proportions of upper caste households are reported from towns with population 50 thousand—above and the big cities.

4.12. The association between household occupation and religion was also examined. Tables (4.8) and (4.9) give for the rural and urban areas respectively the distribution of households in household occupation groups by religion (and caste groups among Hindus).

TABLE (4.8) : PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD OCCUPATION GROUPS BY MAJOR RELIGION AND CASTE (FOR HINDUS) GROUPS, ALL-INDIA RURAL SAMPLE HOUSEHOLDS  
(NS8 4th round)

household occupation	religion											number of households	
	Hinduism (caste)					Islam					others		tribe
	upper	middle	lower	scheduled	all castes	(7)	(8)	(9)	(10)	(11)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
1. farmer	24.38	7.57	6.95	1.54	7.51	6.32	12.31	7.87	4.17	7.56	100		
2. cultivator	43.91	53.30	41.79	27.10	41.45	29.09	37.11	33.81	31.03	40.55	100		
3. share-cropper	3.91	6.18	6.17	8.42	6.17	7.94	9.86	7.88	10.05	8.49	100		
4. agricultural labour	1.09	11.91	16.85	36.19	18.14	18.17	12.12	16.29	17.34	12.93	100		
5. forestry, fishery, livestock workers	0.62	1.59	3.31	2.31	2.42	2.71	3.03	3.70	—	3.66	294		
6. all agricultural occupations	73.91	80.45	73.07	75.66	76.89	61.80	58.57	61.37	56.13	58.35	1000		
7. mining	0.16	0.13	0.45	0.51	0.33	0.34	—	—	—	0.33	23		
8. manufacturer of food products	1.09	1.37	0.75	0.51	0.85	1.62	—	0.46	1.72	0.83	73		
9. manufacturer of textiles	0.47	0.35	1.16	1.86	1.02	3.35	—	1.12	—	1.13	34		
10. other manufacturers	0.16	0.16	0.09	0.11	0.03	0.71	0.35	0.25	0.45	0.23	33		
11. construction and sanitary services	0.16	0.16	1.15	3.07	1.19	1.19	0.78	0.48	—	1.05	33		
12. trade and commerce	3.28	4.15	3.19	1.14	3.15	4.86	1.30	1.05	0.86	1.39	100		
13. transport and communica- tion services	0.62	1.21	1.88	1.86	1.61	3.17	0.80	1.17	—	1.00	100		
14. administrative and profes- sional services	12.14	6.14	8.07	6.92	8.14	5.08	1.80	7.23	5.06	7.71	100		
15. others	7.07	4.22	4.40	4.71	6.01	8.18	1.75	14.27	17.07	7.71	100		
16. all non-agricultural occupa- tions	26.09	19.65	24.93	24.34	26.71	31.89	37.65	26.25	41.84	24.49	1000		
17. all occupations	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000		

1. The percentage distribution of households is over all religions by conversion to Christianity, Islam, etc. and 16.8 per cent are non-Hindus. The percentages of households in the various occupations are based on the total number of households in the sample and may not, therefore, agree with those obtained from percentage distributions based on the total number of households.

TABLE (4.9): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD OCCUPATION GROUPS BY MAJOR RELIGION AND CASTE (FOR HINDUS) GROUPS ALL-INDIA URBAN SAMPLE HOUSEHOLDS  
(NSS 4th round)

household occupation	religion									
	Hindus(caste)					Islam	Shakhs non	Chrs- tians	all religions	percentage of household occupations
	upper	middle	lower	scheduled	all castes					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. farmer	7.13	3.25	3.03	0.72	3.49	0.98	—	1.36	2.38	2.94
2. cultivator	0.19	3.69	4.10	2.17	2.99	1.75	4.55	—	—	2.62
3. share-cropper	0.19	1.30	2.58	0.72	1.49	0.18	—	0.17	—	1.21
4. agricultural labour	0.19	2.17	4.72	4.82	3.12	1.75	—	1.36	—	1.73
5. forestry, fishery and livestock workers	0.19	2.28	4.99	2.41	2.92	0.35	—	4.55	—	2.57
6. all agricultural occupations	7.89	12.69	19.42	10.84	14.01	4.91	4.55	7.72	2.38	12.08
7. mining	—	0.22	—	0.24	0.10	0.18	—	—	—	0.10
8. manufacturer of food products	0.75	1.74	2.67	2.17	4.99	3.68	—	1.36	—	2.46
9. manufacturer of textiles	3.19	6.94	8.28	8.92	7.01	17.16	2.27	4.09	—	8.20
10. other manufacturers	1.31	3.15	3.12	5.30	3.09	1.20	11.36	4.09	2.38	3.40
11. construction and sanitary services	1.69	4.01	4.99	15.90	5.45	5.43	2.27	3.18	2.38	5.40
12. trade and commerce	10.32	18.44	12.64	6.26	13.22	18.38	20.45	10.91	30.95	14.12
13. transport and communication services	7.69	8.24	10.77	14.22	9.90	9.46	9.09	7.73	2.38	9.62
14. administrative and professional services	57.97	37.52	28.85	26.99	36.46	28.19	50.01	42.28	52.39	38.92
15. others	9.19	7.05	9.26	9.16	8.57	8.41	—	18.64	7.14	9.00
16. all non-agricultural occupations	92.11	87.31	80.58	89.16	85.99	95.09	95.45	92.28	97.62	87.92
17. all occupations	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
										3.888

1 See footnote to Table (4.8).



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4.13 The Tables disclosed a number of interesting features. For example, in rural India occupation group farmer, with an all religion average of 7.50 per cent, showed 24.48 per cent of the upper caste Hindu households and only 1.04 per cent of the scheduled caste households. On the other hand, occupation group agricultural labour, with an all religion average of 18.20 per cent, showed only 1.90 per cent from the upper caste Hindu households as against 36.19 per cent from the scheduled caste households. Upper caste Hindu households again showed the maximum proportion in the occupation group administrative and professional services, among all the caste groups and religions. Muslim households contributed the maximum proportion in the occupation group manufacturer of textiles.

# CHAPTER FIVE

## SEX AND AGE COMPOSITION

5.1. The sex and age distribution of the population is useful in giving a quantitative ceiling measure of the potential labour force not only for the current time but for the coming decade or two. The sex-age composition of the population has been reported regularly every decade since the 1870s by the Census. The sex-age composition of the population rendered by the NSS is discussed in this chapter. As will be seen, there is some systematic divergence between the Census and the NSS sex-age distributions, which cannot be ascribed to sampling fluctuations.

5.2. *Age distribution* : Two percentage distributions of the Indian population in four broad age groups by sex derived from Census 1951 and four from NSS 3rd, 4th, 6th and 7th round are shown in Table (5.1). For the Census 1951, the unadjusted distribution and that graduated by the Census Actuary have been taken from *Census of India, Paper No. 3, 1953* and *Paper No. 3, 1954*. NSS 3rd, 6th and 7th round population distributions are obtained from properly weighted estimates but not NSS 4th round results.<sup>1</sup> In NSS 3rd and 4th round, tabulation was done in quinary and decenary age groups and results are presented without any further adjustment for age reporting bias. An examination of the accuracy of age reporting however showed that in the Indian situation the 2-6 : 7-1 system of age grouping is the most efficient.<sup>2</sup> The 2:7 age grouping system was accordingly adopted in subsequent tabulation of NSS 6th and 7th round data, and the proportions under the four age groups 0-14, 15-44, 45-64 and 65-above were then derived from the cumulated population figures, by application of suitable interpolation formulae.<sup>3</sup>

5.3. It will be seen from Table (5.1) that the graduated Census distribution, which could be taken as the true Census sex-age distribution, shows a deficit of persons in the tender ages and an excess in the older ages as compared to the NSS population distributions.<sup>4</sup>

5.4. In the NSS Urban Unemployment Survey conducted in September 1953, an excess in age group 0-15 in towns with population 50 thousand-above (excluding

<sup>1</sup>For operational convenience, tabulation of 4th round data was arranged to give, for a particular rural zone or urban size class of town, properly weighted estimate of persons in sex-activity status combinations for all ages and the distribution of the number of sample persons by age under them. The over-all multiplying factor for the combination was next applied to these age group frequencies under the combination, and thus results in-between 'frequency' and proper 'estimate' were rendered.

<sup>2</sup>A note on the analysis done in this connection has been published separately (NSS No. 12, **A Technical Note on Age Grouping**).

<sup>3</sup>Newton's forward interpolation formula was applied to derive the proportions for the first three age groups and Newton's backward formula was used for the age group 65-above. Differences up to the second order were used for interpolation.

<sup>4</sup>The United Nations—Government of India Mysore Population Survey of 1951 also got an age distribution similar to the NSS in regard to the comparison with the corresponding Census 1951 age distribution.

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the big cities as compared to Census 1951 all other population was less than 1. A similar feature—an excess of 2.3 per cent in the 0-14 age group—observed as compared to Census 1951, was observed in NSS Faridabad Township Survey conducted in March-April 1954.<sup>2</sup> In evaluation of such isolated surveys the agreement in the age distributions of population between the Census and the Survey results can only be considered satisfactory even in face of the 2.3 per cent shortfall in the population below age 15 in the Census. From the consistent repetition of the pattern in successive NSS rounds (as shown also by the sub-sample estimates in the detailed tables) as also in other ad hoc sample surveys, it can now be stated from the cumulated experience and supplementary considerations outlined later that the lower proportion below age 15 in the Census is the result of under-enumeration of children

TABLE 5.1. PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY SEX—ALL-INDIA

(Census of India 1951 and NSS 3rd, 4th, 6th and 7th round)

age group (years)	sex	Census 1951		NSS round			
		graduated <sup>1</sup>	unadjusted <sup>2</sup>	3rd <sup>3</sup>	4th <sup>3</sup>	6th	7th
		3	4	5	6	7	8
1. 0-14	male	37.10	48.18	37.30	47.85	40.00	46.85
2. "	female	37.81	48.36	38.39	48.91	40.00	46.00
3. "	total	37.44	48.26	37.84	48.34	40.00	46.42
4. 15-44	male	46.26	44.93	44.92	43.85	44.00	44.80
5. "	female	45.71	44.83	44.89	44.46	44.00	44.00
6. "	total	46.00	44.88	44.90	44.15	44.00	44.40
7. 45-64	male	13.20	13.82	12.40	12.49	11.00	11.00
8. "	female	12.73	13.24	13.50	12.82	11.00	11.00
9. "	total	12.97	13.53	12.95	12.66	11.00	11.00
10. 65-above	male	3.44	3.07	2.69	2.47	2.46	2.40
11. "	female	3.75	3.37	3.26	2.87	2.44	2.40
12. "	total	3.59	3.22	2.96	2.67	2.40	2.40
13. all ages	male	100.00	100.00	100.00	100.00	100.00	100.00
14. "	female	100.00	100.00	100.00	100.00	100.00	100.00
15. "	total	100.00	100.00	100.00	100.00	100.00	100.00

<sup>1</sup> Smoothed age distribution: *Census of India 1951, Paper No. 5, 1954*

<sup>2</sup> Unadjusted age distribution, excludes displaced persons: *Census of India 1951, Paper No. 5, 1953.*

<sup>3</sup> Unadjusted.

5.5. In the NSS, the institutional population living in nursing homes, hospitals, relief camps, military messing units, jails etc. are excluded from the purview of the survey. The exclusion of the institutional population cannot explain the disparity observed between the Census and the NSS population distributions, as such institutional population was relatively insignificant. Comparative study of female

<sup>3</sup>NSS No. 8, *Preliminary Survey of Urban Unemployment*, p. 13.

<sup>4</sup>NSS No. 6, *The Survey of Faridabad Township*, p. 33.



population proportions by age groups, between the Census and NSS rounds, confirms this position as females are far less in institutional population in India. The consistent balance between the male and female proportions returned in the NSS rules out the possibility of the NSS distribution having been deformed by missing of the **more mobile males in the young-adult age range.**

5.6. A differential bias in age recording might be suggested as a possible cause of the divergence between the Census and the NSS age distributions. Since, however, the population distributions in both the Census and NSS 6th and 7th round were adjusted for age bias, and the unadjusted Census distribution also shows similar differences with NSS 3rd and 4th round distributions, the bias in age recording is not likely to be the substantive reason behind the difference between the two **sets of age distribution.**

5.7. Missing of persons in the tender ages by the Census is thus the plausible explanation. Such omission in counting is not an uncommon feature of the censuses in general. In the NSS, apart from the listing of general demographic particulars, a host of other information about the household members is collected; and, as such the chance of persons of tender age being missed becomes relatively insignificant in this setting. This incidentally illustrates the usefulness of collecting auxiliary information which does not appear to have a direct bearing on the topics under study.

5.8. NSS 6th and 7th round age distributions, obtained from the most efficient system of age grouping that minimized the errors of age reporting, had about 41 per cent of the population in age group 0-14, 45 per cent in age group 15-44, 12 per cent in age group 45-64 and 2 per cent in age group 65-above. As regards the sex composition, the proportion of males to females in the first three broad age groups was slightly higher, but the position is reversed in age group 65-above. The proportions of population in finer age groups obtained from combined NSS 6th and 7th round data in the rural and the urban sectors are shown later in Table (7.7). It will be seen from that Table that the proportion of females is slightly higher in the age-groups 15-19 and 20-24, but this may as well be the outcome of the known age bias **of mis-reporting the ages of young women.**

5.9. The percentage distributions of population in the four broad age groups are shown for the UK, the USA, Japan, China, Brazil, and India in Table (5.2). A higher proportion of population below age 15 and a lower proportion above age 65 is observed in China, Brazil, and India as compared to the UK, the USA, and Japan. As against the below age 15 population proportions of 41-42 per cent for China, Brazil, and India, the proportions for the UK, the USA, and Japan are 23, 27 and 35 per cent respectively. This younger age pattern is typical of the less developed economies and involves proportionately greater "investment in human capital". The higher below age 15 population proportion would have resulted in unfavourable dependency load and labour force supply position, but is offset by greater labour force participation of persons below age 15, which, however, is not desirable in itself.

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TABLE (5.2): PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY SEX FOR DIFFERENT COUNTRIES<sup>1</sup>

country	sex	age group (years)				
		0-14	15-64	65-69	70 and over	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. UK <sup>2</sup> (1951)	male	24.05	43.58	23.08	9.29	100.00
2. "	female	21.33	41.83	24.61	12.24	100.00
3. "	total	22.63	42.66	23.85	10.83	100.00
4. USA (1950)	male	27.87	44.11	20.36	7.66	100.00
5. "	female	26.45	44.81	20.05	8.69	100.00
6. "	total	27.16	44.46	20.20	8.18	100.00
7. Japan (1950)	male	36.68	43.80	15.36	4.26	100.00
8. "	female	34.22	45.50	14.68	5.60	100.00
9. "	total	35.44	44.66	14.96	4.94	100.00
10. China : Taiwan (1952)	male	42.35	45.02	10.63	1.93	100.00
11. "	female	42.05	44.33	10.59	3.03	100.00
12. "	total	42.22	44.68	10.62	2.48	100.00
13. Brazil (1950)	male	43.44	44.26	11.04	2.36	100.00
14. "	female	41.29	45.63	10.43	2.63	100.00
15. "	total	41.86	44.96	10.73	2.45	100.00
16. India <sup>3</sup> (Census 1951)	male	37.10	46.26	13.20	3.44	100.00
17. "	female	37.81	45.71	12.73	3.75	100.00
18. "	total	37.44	46.00	12.97	3.59	100.00
19. India (NSS 6th and 7th round combined)	male	41.05	44.69	12.02	2.24	100.00
20. "	female	40.38	45.18	11.85	2.59	100.00
21. "	total	40.72	44.93	11.94	2.41	100.00

<sup>1</sup> Figures for countries other than India from *U.N. Demographic Year Book, 1954*.

<sup>2</sup> Excludes Northern Ireland.

<sup>3</sup> Smoothed age distribution : *Census of India 1951, Paper No. 3, 1954*.

5.10. The rural-urban differential in age distribution is shown for NSS 6th and 7th round combined in Table (5.3), along with the comparative Census 1951 results. A greater proportion of persons appear in age group 0-14 in the rural sector. As against 41.23 per cent of population below age 15 in the rural sector, the corresponding urban population is 37.98 per cent. This feature is also observed in Census 1951, which had 38.83 per cent of rural population but 36.06 per cent of urban population below age 15. This difference in the rural and urban age distributions is occasioned mostly by males. In combined NSS 6th and 7th round, 55.96 and 60.62 per cent of the male population come in the working age range 15-64 in the rural and urban sectors respectively. The migration of males in the working age groups to the urban sector is the obvious reason of this difference and is also reflected in the high sex ratio in the urban sector.

TABLE 40: PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY SEX, ALL-INDIA RURAL AND URBAN

(Census of India 1951 and NSS 6th & 7th round combined)

age group (years)	sector	Census 1951 <sup>1</sup>			NSS 6th and 7th round combined		
		male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0-11	rural	29.94	29.09	29.53	41.83	40.83	41.33
1.	urban	34.33	37.82	36.08	36.99	39.08	37.98
2.	all India	29.18	29.86	29.56	41.83	40.26	40.77
12-16	rural	43.04	44.30	44.18	43.93	44.83	44.37
3.	urban	49.94	46.34	48.40	48.84	47.13	47.94
4.	all India	44.98	44.83	44.96	44.99	45.18	44.93
17-44	rural	14.00	13.36	13.68	12.03	11.96	11.99
5.	urban	12.93	12.63	12.60	11.94	11.31	11.64
6.	all India	13.82	13.24	13.54	12.02	11.88	11.94
45-64	rural	3.18	3.43	3.31	2.21	2.61	2.41
7.	urban	2.54	2.99	2.74	2.39	2.48	2.44
8.	all India	2.97	3.37	3.22	2.24	2.89	2.41
65 above	rural	100.00	100.00	100.00	100.00	100.00	100.00
9.	urban	100.00	100.00	100.00	100.00	100.00	100.00
10.	all India	100.00	100.00	100.00	100.00	100.00	100.00

<sup>1</sup> Unadjusted age distribution, excludes displaced persons: *Census of India 1951, Paper No. 3.*

5.11 The percentage distribution of population in seven age groups, for the six rural population zones and five urban size classes of towns, is shown for males and females in Table 5.4 from NSS 7th round. The disparity between age distributions of the rural and the urban sectors has already been discussed. The age distribution of the rural population zones is more or less similar except for certain age groups in north west and south zones. For example, in age group 0-11, north west zone records the highest proportion 36.53 per cent, and south zone the lowest 32.15 per cent. Again in the age range 17-41, north west zone is sharply differentiated from the other zones in that the proportion of males is 48.10 per cent and of females 46.75 per cent, as against about 50-51 per cent for the other zones except for the south zone which goes to the other extreme with 53.67 per cent females in this age range.

5.12 Between the urban population size classes of towns, a smaller proportion of male population in age groups 0-11 and 12-16, is observed in the big cities, as compared to the other size classes of towns. 24.74 per cent of males are recorded in age group 0-11 in the big cities, as against 30.86 per cent in towns with population between 15-50 thousand. The proportion of males in age group 12-16 is also lower in the big cities as compared to the other size classes of towns. For age groups 22-31 and 32-41, on the other hand, a higher proportion of population is observed in the big cities: the 50 thousand-one lakh size class of towns however records the maximum proportion in the next higher age group 42-61. The variation in age group proportions between size classes of towns is relatively lower among females.





5.13. *Sex ratio* : The sex ratios, taken as the number of males per 100 females, in the four broad age groups for NSS 6th and 7th round combined, Census 1951 and a number of other countries, are shown in Table (5.5). Census 1951 sex ratios are based on the unadjusted age returns. While the Census and NSS 6th and 7th round over-all sex ratios agree for the rural sector, the NSS ratios are comparatively lower for the urban sector, particularly in the working age range 15-64. It is not possible at this stage to say whether under-enumeration of women in the age range could be the reason for such disparity.

TABLE (5.5) : SEX RATIO (NUMBER OF MALES PER 100 FEMALES) OF THE POPULATION IN AGE GROUPS IN DIFFERENT COUNTRIES<sup>1</sup>

age group (years)	Census 1951 <sup>2</sup>			NSS 6th and 7th round combined			other countries				
	rural	urban	all- India	rural	urban	all- India	UK <sup>3</sup> (1950)	USA (1950)	Japan (1950)	China <sup>4</sup> (1952)	Brazil (1950)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. 0-14	104	106	104	106	104	106	104	103	103	105	102
2. 15-44	102	125	106	101	114	103	96	97	93	106	96
3. 45-64	108	119	110	104	116	105	86	100	100	105	105
4. 65-above	95	99	96	87	106	90	70	86	73	67	85
5. all ages	103	116	105	103	110	104	92	98	96	104	99

<sup>1</sup> Figures for countries other than India from *UN Demographic Year Book, 1953*.

<sup>2</sup> Unadjusted age distribution, excludes displaced persons : *Census of India 1951, Paper No. 3, 1953*.

<sup>3</sup> Excludes Northern Ireland.

<sup>4</sup> Taiwan only.

## CHAPTER SIX

## ECONOMIC AND MARITAL STATUS

6.1. The economic status classifies the population into earners (self-supporting persons), earning dependants and non-earning dependants. Apart from the distribution of the population by economic status, the two-way classification by economic and marital status, useful in showing up the effect of marital status on the supply of labour force, specially for females, has been examined in this chapter.

6.2. The economic status had been until recently the only attribute available for estimating the economically active population of India from Census data. The concept of economic status did not, however, remain unaltered over the successive Censuses, and valid comparisons over time are thus not possible.<sup>1</sup> The same concept of economic status as used in Census 1951 was adopted by the NSS, but as will be seen, significant differences emerged in the classification of earning and non-earning dependants. It is worthwhile to note here that the concept has the advantage of being readily grasped, but is essentially a subjective one, the criteria for classifying a person into a particular economic status group being whether he earns enough or not to maintain himself or whether he does not earn at all. In Census 1951, no specific reference period was laid down for economic status classification; the classification is therefore based on what the individual considered to be his usual condition. Persons unemployed at the Census have apparently described themselves as belonging to any of the above three classifications, depending on what they considered to be usual for them.

6.3. *Distribution by economic status:* The population distribution by economic status, of earners, earning dependants<sup>2</sup> and non-earning dependants by sex, in the rural and the urban sectors, is shown in Table (6.1) from Census 1951 and NSS 1st and 4th round. In the rural sector, the proportion of earners is seen to be of the same order, about 29 per cent, in Census 1951 and NSS 1st and 4th round; the proportions for males and females also agree between Census 1951 and the NSS 4th round. In the urban sector, the Census returned slightly higher proportion of male earners than the NSS, while the proportion for females was found to be of the same order. In contrast to the broad agreement in the proportion of earners, a big difference is observed between Census 1951 and the NSS rounds in respect of the earning dependants. In both the rural and urban sectors, the proportion of male earning dependants in Census 1951 is only about two-thirds of the

<sup>1</sup> The changing concepts and definitions of economic status adopted in successive Indian Censuses are discussed briefly in Appendix 1.

<sup>2</sup> The unpaid household labour were to be included in the category of earning dependants by definition in the NSS. Two or more members of a household jointly cultivating land and securing income therefrom were each to be recorded as earner or earning dependant according to the share attributable to each of them. The same applied to other household enterprises carried on jointly.



proportion obtained from the NSS 4th round, while for female earning dependants Census 1951 proportion is about half the NSS 4th round proportion. This big difference in the proportion of earning dependants has resulted in a corresponding rise in the proportion of non-earning dependants in Census 1951. From the descriptions of economic status classifications given in the Census, it does not appear unlikely that a substantial section of earning dependants, particularly females, have rather been recorded as non-earning dependants there.

TABLE 6.1. PERCENTAGE DISTRIBUTION OF POPULATION IN ECONOMIC STATUS GROUPS BY SEX : ALL-INDIA RURAL AND URBAN

(Census of India 1951 and NSS 1st &amp; 4th round)

economic status	sector	male		female		total		
		Census 1951 <sup>1</sup>	NSS 4th round	Census 1951 <sup>1</sup>	NSS 4th round	Census 1951 <sup>1</sup>	NSS 1st round <sup>2</sup>	NSS 4th round
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. earner	rural	47.10	49.03	10.43	9.48	29.08	28.07	29.52
2. "	urban	49.85	45.46	7.34	7.83	30.18		27.05
3. "	all-India	47.59	48.44	9.93	9.21	29.28		29.11
4. earning dependant	rural	7.93	11.07	16.02	24.85	11.92	16.57	17.87
5. " "	urban	4.50	6.72	4.55	8.43	4.53		7.56
6. " "	all-India	7.32	10.35	14.14	22.18	10.64		16.18
7. non-earning dependant	rural	44.97	39.90	73.55	65.67	59.00	55.36	52.61
8. " "	urban	45.65	47.82	88.11	83.74	65.29		65.39
9. " "	all-India	45.09	41.21	75.93	68.61	60.08		54.71
10. all economic status	rural	100.00	100.00	100.00	100.00	100.00	100.00	100.00
11. " "	urban	100.00	100.00	100.00	100.00	100.00		100.00
12. " "	all-India	100.00	100.00	100.00	100.00	100.00		100.00

<sup>1</sup> Census of India 1951, Paper No. 3, 1953, pp. 34-40.<sup>2</sup> NSS General Report No. 1 on the First Round, December 1952, p.97.

6.4. *Distribution by marital status* : The percentage distribution of population in three marital status groups, (1) the single, (2) the married, and (3) the widowed or separated,<sup>3</sup> is given in Table (6.2), from Census 1951 and NSS 4th and 7th round, for both the rural and urban sectors. The Census and the NSS marital status distributions show close agreement. The proportions of single and married persons are about 45 per cent each of the total population. Of males, about 51 per cent are single

<sup>3</sup> Including the divorced.

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and 44 per cent married of females, about 40 per cent are single and 46 per cent married. A slightly higher proportion of single persons and correspondingly lower proportion of married persons are reported from the urban sector as compared to the rural sector. The widowed divorced and separated constituted about 9 per cent of the total population 5 per cent among males and 14 per cent among females with practically no rural-urban differential.

TABLE 6.2 PERCENTAGE DISTRIBUTION OF POPULATION IN MARITAL STATUS GROUPS BY SEX : ALL-INDIA RURAL AND URBAN  
(Census of India 1951<sup>1</sup> and NSS 4th and 7th round)

marital status	sector	male			female			total		
		Census 1951	NSS 4th round	NSS 7th round	Census 1951	NSS 4th round	NSS 7th round	Census 1951	NSS 4th round	NSS 7th round
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. single	rural	48.81	50.66	50.34	38.24	38.35	39.29	43.03	44.00	44.87
2. "	urban	50.49	54.62	54.39	41.56	42.09	42.57	46.36	48.61	48.76
3. "	all-India	49.13	51.87	51.02	38.76	39.45	39.81	44.06	45.80	45.51
4. married	rural	45.99	44.25	44.40	48.95	47.89	46.93	47.44	46.05	45.65
5. "	urban	45.14	41.31	41.06	45.57	43.53	44.06	45.35	42.37	42.80
6. "	all-India	45.84	43.35	43.93	48.42	46.61	46.47	47.10	44.94	45.18
7. widowed or separated	rural	5.17	5.09	5.26	12.81	13.76	13.78	8.93	9.35	9.48
8. "	urban	4.37	4.07	3.95	12.87	14.39	13.37	8.29	9.02	8.44
9. "	all-India	5.03	4.78	5.05	12.82	13.94	13.72	8.62	9.26	9.31
10. all marital status	rural	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
11. "	urban	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
12. "	all-India	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

<sup>1</sup> Census of India 1951, Volume I, Part II-A, Demographic Tables, pp. 164-210.

6.5. Table (6.3) shows the percentage distribution of population, from NSS 7th round, in the three marital status groups by three broad age groups, for both the rural and urban sectors. A higher proportion of married females is observed in age groups 0-16 and 17-26 in both the sectors : but the position is reversed in age group 27-above, owing to the increased incidence of widowhood among females. Except for married females in age group 17-26, the proportions of married population in age groups 0-16 and 17-26 are much higher in the rural sector than in the urban sector. In age group 27-above there is no marked rural-urban differential with regard to marital status.

TABLE 6.5 PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY MARITAL STATUS AND SEX : ALL INDIA RURAL AND URBAN ESTIMATED PERSONS (NSS 7th round)

	age group (years)	marital status	rural			urban		
			male	female	total	male	female	total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	0-16	single	94.15	85.53	89.93	99.03	91.65	95.40
2.	"	married	5.60	14.17	9.79	0.93	8.24	4.52
3.	"	widowed or separated	0.25	0.30	0.28	0.04	0.11	0.08
4.	"	all marital status	100.00	100.00	100.00	100.00	100.00	100.00
5.	17-26	single	33.82	4.43	18.72	58.19	10.77	35.79
6.	"	married	64.14	91.80	78.35	41.15	85.61	62.24
7.	"	widowed or separated	2.04	3.77	2.93	0.66	3.62	2.06
8.	"	all marital status	100.00	100.00	100.00	100.00	100.00	100.00
9.	27-above	single	3.98	0.34	2.19	4.86	1.34	3.23
10.	"	married	83.08	64.29	73.86	85.31	64.08	75.50
11.	"	widowed or separated	12.94	35.37	23.95	9.83	34.58	21.27
12.	"	all marital status	100.00	100.00	100.00	100.00	100.00	100.00
13.	all ages	single	50.34	39.29	44.87	54.39	42.57	48.76
14.	"	married	44.40	46.93	45.65	41.66	44.06	42.80
15.	"	widowed or separated	5.26	13.78	9.48	3.95	13.37	8.44
16.	"	all marital status	100.00	100.00	100.00	100.00	100.00	100.00
17.	(number of sample persons)		(20,930)	(20,168)	(41,398)	(4,082)	(3,697)	(7,779)

6.6. *Distribution by economic and marital status*: The distribution of population in the economic status groups by sex and marital status is shown in Table (6.4) for the rural and the urban sectors separately, from the NSS 4th round. As is expected, in both the sectors non-earning dependants preponderate among single persons, and earners among the married. A greater proportion of non-earning dependants (16.64 per cent) is returned by widowed and separated males than by the married ones (5.85 per cent). The proportion of earners is of the same order for single males in both the sectors: the rural sector returned a higher proportion (12.76 per cent) of single earning dependants than the urban (7.45 per cent). For married males, the proportions of earners, earning dependants and non-earning dependants are generally of the same level in the two sectors. About 93 per cent of single rural females and 95 per cent of single urban females are non-earning dependants. As with males, this is naturally tied up with the ages at marriage which are substantially lower for the females. For married females, a definitely higher proportion of earners and earning dependants is observed in the rural sector as compared to the urban: the proportions of female married earners and earning dependants in the rural sector are double and triple respectively of the corresponding urban proportions. For the widowed or separated females, more or less equal proportions were reported as earners in both the sectors, but the rural proportion of earning dependants was double the urban. The greater opportunity for participation in household enterprises, available in the rural sector, explains these sharp differences in the economic status distribution of females ever-married.



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6.6. PERCENTAGE DISTRIBUTION OF POPULATION IN ECONOMIC STATUS GROUPS BY MARITAL STATUS AND SEX : ALL INDIA RURAL AND URBAN SAMPLE PERSONS  
(NSS 4th round)

marital status		sector	economic status			total
			earner	earning dependant	non-earning dependant	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>.1: male</b>						
1.	single	rural	14.37	12.76	72.87	100.00
2.	"	urban	15.08	7.43	77.47	100.00
3.	"	all-India	14.60	11.06	74.34	100.00
4.	married	rural	85.09	9.53	5.38	100.00
5.	"	urban	87.80	5.21	6.99	100.00
6.	"	all-India	85.87	8.38	5.85	100.00
7.	widowed or separated	rural	77.79	8.17	14.04	100.00
8.	"	urban	68.85	7.07	24.08	100.00
9.	"	all-India	73.48	7.88	18.64	100.00
10.	all marital status <sup>1</sup>	rural	48.89	11.10	40.01	100.00
11.	"	urban	47.30	6.31	46.19	100.00
12.	"	all-India	48.41	9.70	41.89	100.00
<b>.2: female</b>						
1.	single	rural	0.92	6.53	92.55	100.00
2.	"	urban	2.36	2.31	95.33	100.00
3.	"	all-India	1.37	5.21	93.42	100.00
4.	married	rural	12.48	39.48	48.04	100.00
5.	"	urban	6.34	13.03	80.63	100.00
6.	"	all-India	10.79	32.22	56.99	100.00
7.	widowed or separated	rural	26.18	21.32	52.50	100.00
8.	"	urban	24.64	11.09	64.26	100.00
9.	"	all-India	25.71	18.49	55.80	100.00
10.	all marital status <sup>1</sup>	rural	9.93	24.35	65.72	100.00
11.	"	urban	7.30	8.22	84.48	100.00
12.	"	all-India	9.16	19.61	71.23	100.00
<b>.3: total</b>						
1.	single	rural	8.67	10.12	81.21	100.00
2.	"	urban	9.79	5.31	84.90	100.00
3.	"	all-India	9.03	8.59	82.38	100.00
4.	married	rural	47.89	24.88	27.23	100.00
5.	"	urban	47.64	9.06	43.30	100.00
6.	"	all-India	47.82	20.41	31.77	100.00
7.	widowed or separated	rural	40.42	17.69	41.89	100.00
8.	"	urban	35.01	10.07	54.92	100.00
9.	"	all-India	38.84	15.47	45.69	100.00
10.	all marital status <sup>1</sup>	rural	29.76	17.62	52.62	100.00
11.	"	urban	28.10	7.33	64.57	100.00
12.	"	all-India	29.22	14.54	56.24	100.00
13.	(number of sample persons)		(17,612)	(8,765)	(5,897)	(60,274)

<sup>1</sup> The percentage of population in economic status (over all marital status groups) in this table may not agree with those given in other tables for reasons as given in footnote to Table (4.8).

6.7. The proportions of population in the marital status groups, by sex and economic status, for the rural and urban sectors, are shown in Table (6.5) from NSS 4th round; this is an alternative presentation of the data of Table (6.4). From Table (6.5), it is seen that among earners and earning dependants, the proportion of single males is greater in the urban sector than in the rural. Female earners and

earning dependants in marital status group widowed or separated show higher proportions in the urban sector; but the proportions of earners and earning dependants for married females are higher in the rural sector. Among female earners, the proportions, single and married, differ very widely between the rural and the urban sectors.

TABLE (6.5): PERCENTAGE DISTRIBUTION OF POPULATION IN MARITAL STATUS GROUPS BY ECONOMIC STATUS AND SEX : ALL-INDIA RURAL AND URBAN SAMPLE PERSONS (NSS 4th round)

economic status	sector	marital status			total
		single	married	widowed or separated	
(1)	(2)	(3)	(4)	(5)	(6)
<i>.1 : male</i>					
1. earner	rural	14.89	77.01	8.10	100.00
2. "	urban	17.41	76.66	5.93	100.00
3. "	all-India	15.64	76.91	7.45	100.00
4. earning dependant	rural	58.24	38.02	3.74	100.00
5. " "	urban	62.52	33.06	4.42	100.00
6. " "	all-India	59.12	37.00	3.88	100.00
7. non-earning dependant	rural	92.27	5.95	1.78	100.00
8. " "	urban	91.63	6.25	2.12	100.00
9. " "	all-India	92.05	6.05	1.90	100.00
10. all economic status	rural	50.66	44.25	5.09	100.00
11. " "	urban	54.62	41.31	4.07	100.00
12. " "	all-India	51.87	43.35	4.78	100.00
<i>.2 : female</i>					
1. earner	rural	3.54	60.19	36.27	100.00
2. "	urban	13.61	37.82	48.57	100.00
3. "	all-India	5.90	54.95	39.15	100.00
4. earning dependant	rural	10.29	77.67	12.04	100.00
5. " "	urban	11.80	68.96	19.24	100.00
6. " "	all-India	10.48	76.59	12.93	100.00
7. non-earning dependant	rural	54.00	35.01	10.99	100.00
8. " "	urban	47.49	41.55	10.96	100.00
9. " "	all-India	51.73	37.29	10.98	100.00
10. all economic status	rural	38.35	47.89	13.76	100.00
11. " "	urban	42.08	43.53	14.39	100.00
12. " "	all-India	39.45	46.61	13.94	100.00
<i>.3 : total</i>					
1. earner	rural	13.02	74.25	12.73	100.00
2. "	urban	16.94	71.82	11.24	100.00
3. "	all-India	14.15	73.55	12.30	100.00
4. earning dependant	rural	25.61	65.00	9.39	100.00
5. " "	urban	35.22	52.38	12.40	100.00
6. " "	all-India	27.06	63.09	9.85	100.00
7. non-earning dependant	rural	68.75	23.81	7.44	100.00
8. " "	urban	63.92	28.41	7.67	100.00
9. " "	all-India	67.09	25.39	7.52	100.00
10. all economic status	rural	44.60	46.05	9.35	100.00
11. " "	urban	48.61	42.37	9.02	100.00
12. " "	all-India	45.80	44.94	9.26	100.00
13. (number of sample persons)		(27,603)	(27,088)	(5,579)	(60,270)

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### 6.8. *Distribution of earners and earning dependants by household occupation :*

The percentage distribution of the gainfully employed in 13 household occupation groups by economic status (earner and earning dependant), for both the rural and urban sectors, is given in Table (6.6) from the NSS 4th round. In the rural sector, of the total earners, 45.41 per cent have household occupation cultivator, 17.01 per cent household occupation agricultural labour and 7.03 per cent household occupation share-cropper. Earning dependants appear in a higher proportion in household occupation cultivator (53.43 per cent). In the urban sector, 37.71 per cent of earners and 23.41 per cent of earning dependants have household occupation administrative and professional services. The household occupation group trade and commerce takes the next important place in the urban sector, accounting for 15.21 per cent earners and 11.20 per cent earning dependants.

TABLE (6.6) : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN HOUSEHOLD OCCUPATION GROUPS BY ECONOMIC STATUS—ALL INDIA  
RURAL AND URBAN SAMPLE PERSONS  
(NSS 4th round)

household occupation	rural			urban		
	earner	earning dependant	all employed	all employed	earner	earning dependant
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. farmer	7.56	3.90	6.20	3.15	3.51	1.67
2. cultivator	45.41	53.43	48.40	4.28	3.47	7.69
3. share-cropper	7.03	7.63	7.25	1.74	1.35	3.34
4. agricultural labour	17.01	16.18	16.70	3.65	3.11	5.93
5. forestry, fishery, livestock workers	2.32	2.53	2.40	3.14	2.75	4.76
6. all agricultural occupations	79.33	83.67	80.95	15.96	14.19	23.39
7. manufacturer of food products	0.77	0.54	0.68	2.56	2.31	3.59
8. manufacturer of textiles	1.04	1.12	1.07	8.84	8.69	9.44
9. other manufacturers	2.17	2.31	2.22	3.77	3.20	5.76
10. construction and sanitary services	1.64	0.87	1.36	5.99	5.88	6.43
11. trade and commerce	3.28	1.56	2.64	14.43	15.21	11.20
12. transport and communication services	1.49	1.22	1.39	9.16	9.27	6.69
13. administrative and professional services	9.05	7.65	8.53	35.91	37.71	28.41
14. others	1.23	1.06	1.16	3.38	3.45	3.09
15. all non-agricultural occupations	20.67	16.33	19.05	84.04	85.81	76.61
16. all occupations	100.00	100.00	100.00	100.00	100.00	100.00
17. (number of sample persons)	(12,524)	(7,459)	(19,983)	(6,214)	(5,017)	(1,197)



## CHAPTER SEVEN

## ACTIVITY STATUS

7.1. In this chapter, classification of the population into economically active and inactive groups is made by activity status and the proportion economically active is studied in regional and urbanisation differentials. The average duration and age at entry in the current activity status and the working life expectancy have also been dealt with in this chapter. The distribution of the gainfully employed persons in the different branches of the economy and their intensities of employment and incomes are the subject matters of the next two chapters.

7.2. *Labour force* : The 'labour force' is treated as coterminous with the 'economically active' population during a reference period in this Report and is taken to comprise of persons who furnish the supply of labour for the production of goods and services, that is (1) employers, (2) workers on own account, (3) employees, (4) unpaid household labour, and (5) the unemployed seeking to be the 'gainfully employed' by being included in any of the first four categories. This basic concept of labour force is an internationally agreed one, but comparability is affected because of differing approaches in measurement of labour force, and in treatment of certain **borderline activities like unpaid household labour**.

7.3. In measuring the 'economically active', there have been two internationally recognised approaches, one the 'gainful occupation' and the other the 'labour force' approach. Under the 'gainful occupation' concept, each person is supposed to have a stable functional role in the economy more or less independent of the person's activity at any given time. In the 'labour force' approach, very broadly all persons who report as at work or with a job if not at work and seeking employment if without a job in a specific short reference period of a day or week are counted in the labour force. There are advantages and difficulties with either of these approaches, and the problems of the rural agricultural economies are particularly intricate. The Indian Census went by the 'gainful occupation' approach and did not provide labour force estimates. The NSS generally followed a composite approach, with a view to maintaining comparability while trying to evolve a suitable methodology through operational research.

7.4. In the Census, the number of earners, earning dependants, and non-earning dependants are given, as also the distribution of earners under occupation groups. An attempt was made to compare the NSS data on the gainfully employed with Census 1951 figures on basis of certain plausible assumptions. The method followed and the details of calculation are explained in Appendix 2. From the Census data of earners and earning dependants, persons in ungainful occupations or in receipt of incomes from ungainful sources as rents and pensions were excluded to give the estimated number of gainfully employed persons. The proportions of gainfully employed population in Census 1951 (computed as above) and in four NSS

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Results are shown in Table (7.1) for the rural and the urban sector separately. In the all-India proportion of the gainfully employed varies from 44.66 per cent in the 4th round to 43.42 per cent in NSS 7th round. In Census 1951 the proportion is only 38.98 per cent. In the rural sector, the NSS proportion is of the order of 46 per cent and the Census proportion 40 per cent. The proportions of gainfully employed persons are of the same order in the Census and in the NSS only for the urban males; for others, the Census proportions are lower. The observed differences arise mainly from the different approaches adopted for measuring labour force and under-reporting of earning dependants in the Census as compared to the NSS. Omission in the Census of a sizeable proportion of females engaged in household enterprises from the gainfully employed category is indicated.<sup>1</sup>

TABLE (7.1): PERCENTAGE OF GAINFULLY EMPLOYED POPULATION IN CENSUS AND NSS ROUNDS BY SEX: ALL INDIA RURAL AND URBAN

(Census of India 1951 and NSS 4th-7th round)

survey and period	rural			urban			all-India		
	male	female	total	male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Census (1951) <sup>2</sup>	54.10	25.76	40.18	52.60	10.71	33.26	53.85	23.28	38.98
2. NSS 4th round (April-September 1952)	59.34	33.79	46.74	51.93	15.16	34.21	56.10	31.77	44.66
3. NSS 5th round (December 1952- March 1953)	59.26	35.99	47.71	53.45	16.53	35.43	56.36	33.06	45.83
4. NSS 6th round (May-August 1953)	58.05	33.03	45.72	53.91	14.96	35.42	57.42	30.49	44.23
5. NSS 7th round (October 1953- March 1954)	58.76	31.46	45.27	51.76	14.54	34.02	57.56	28.73	43.42

7.5. *Activity status* - The concept of the activity status, called industrial status from historical associations in earlier NSS rounds, has undergone elaborations over the successive NSS rounds. For recording the activity status in the NSS, an employer was defined as one who hired one or more persons on wage or salary basis, in cash or kind, to help in his productive enterprises. An employee was one

<sup>1</sup> Similar higher labour force proportions were observed in the United Nations—Government of India Joint Mysore Population Survey, 1951, as compared to Mysore Census 1951.

<sup>2</sup> Estimated (see Appendix 2).

who worked for wage or salary in cash or kind under individuals or groups of individuals in public or private institutions. A person in the position of his own employer and employee was reckoned as working on own account. The status of all earning dependants working in their own household enterprises was also recorded under own account workers up to the NSS 4th round. Unemployed seeking employment were treated as a separate category in the NSS 4th round for the first time. All other persons outside the labour force, including those who drew their earnings from pensions, past savings, remittances or ungainful activities, were put under a single activity category. In the NSS 5th round, persons engaged as unpaid hands in the productive enterprises of the household were treated as a separate category called unpaid household labour. The unemployed seeking employment were also split into two groups, those seeking employment for the first time and others. In the same round, the rentiers were constituted into a separate activity status, and so were the pensioners and beggars. In the NSS 6th round, family members engaged in domestic work were taken as a separate category. In modification of the previous classifications, rentiers, pensioners and remittance-holders were combined to form one category, and beggars and persons living on earnings from ungainful activities were put under a separate category.

7.6. A specific reference period was introduced in the NSS 6th round for the first time. A person working for pay or profit on any one day of the reference period of 30 days preceding the date of survey was to be considered as employed. Persons with a job but temporarily absent from work during the reference period owing to illness, vacation, industrial disputes or being laid off temporarily, were to be considered as employed, as also persons waiting to take up new jobs offered or to start new business. To be classed as unemployed seeking employment, a person was to have been without a job for the whole reference period, seeking one, and in a position to accept a job if offered. A person who did not seek work because of temporary illness or on the belief that no work was available or because he had been expecting to return to a job from which he had been indefinitely laid off was also to be treated as unemployed. In the NSS 7th round, the same concepts and definitions as in the 6th round continued. For persons in the labour force, the duration in the current activity status, and for persons seeking employment not for the first time, their last industry-occupations were taken in the NSS 7th round.

7.7. Table (7.2) gives the percentage distribution of estimated population in activity status groups by sex, for both the rural and the urban sectors, for the NSS 4th round. Table (7.3) gives the corresponding distributions for the NSS 6th and the 7th round. The consistency of the proportion economically active, throughout the NSS rounds, has already been pointed out. As to the subdivision of the economically active into its constituent categories, NSS 4th round results are not strictly comparable with NSS 6th and 7th round results, since the reference period was kept open in the 4th round with the 'gainful occupation' concept and the activity status groups were altered in-between.



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 12. THE ECONOMICALLY ACTIVE POPULATION BY ACTIVITY STATUS, SEX AND AGE, 1953-54  
RURAL AND URBAN ESTIMATES, INDIA

Units: lakhs of persons

activity status	sector	(3)	(4)	(5)
(1)	(2)			
1. employee	rural	1.20	0.30	0.70
2. "	urban	0.40	0.04	0.24
3. "	all India	1.00	0.28	0.60
4. employee	rural	10.13	11.00	13.10
5. "	urban	29.70	9.34	19.63
6. "	all-India	20.10	11.34	15.00
7. own account worker and unpaid family labour	rural	10.00	11.00	13.10
8. "	urban	29.70	9.34	19.63
9. "	all-India	20.10	11.34	15.00
10. total employed	rural	20.24	22.70	46.74
11. "	urban	31.93	10.16	24.00
12. "	all-India	33.10	20.77	44.60
13. unemployed seeking employment	rural	0.00	0.04	0.00
14. "	urban	0.00	0.00	0.00
15. "	all-India	0.00	0.00	0.00
16. total labour force	rural	20.24	22.70	46.74
17. "	urban	31.93	10.16	24.00
18. "	all-India	33.10	20.77	44.60
19. total outside labour force	rural	40.61	40.17	40.34
20. "	urban	47.08	30.70	38.48
21. "	all-India	41.77	60.88	38.85
22. all activity status	rural	100.00	100.00	100.00
23. "	urban	100.00	100.00	100.00
24. "	all-India	100.00	100.00	100.00
25. number of sample persons		10,740	20,440	60,240

7.8. As between the 6th and the 7th round, the proportions in the activity status categories are seen to be of the same order, the deviation between the estimates for the two rounds would be composed of two parts— one due to the sampling error and the other to the seasonality factor arising out of difference in timing of the rounds. As will be seen from the detailed tables given in Appendix 9, the deviations between the two independent samples within round were generally smaller in comparison, and the seasonality factor appears to be significant. It will be recalled that NSS 6th round covered the period May–August 1953, and the 7th round October 1953–March 1954. Thus, by combining the estimates from these two rounds, a period of almost one year would be covered, which would be more representative for the whole cycle of a year than estimates from any single round. The NSS 6th and 7th round combined estimates have accordingly been used often in later discussions.

TABLE 7. PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX—ALL INDIA RURAL AND URBAN ESTIMATED PERSONS (NSS 6th & 7th rounds)

activity status		male			female			total		
		6th round	7th round	combined	6th round	7th round	combined	6th round	7th round	combined
1	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<b>employer</b>										
1.	rural	0.74	1.00	0.91	0.13	0.30	0.21	0.43	0.70	0.46
2.	urban	0.14	0.72	0.39	0.07	0.04	0.05	0.27	0.39	0.33
3.	all-India	0.69	1.03	0.86	0.12	0.26	0.19	0.41	0.65	0.52
<b>employee</b>										
4.	rural	17.55	16.02	16.81	10.47	10.13	10.31	14.06	13.11	13.60
5.	urban	30.27	28.18	29.18	8.53	7.73	8.11	19.95	18.44	19.16
6.	all-India	19.44	18.10	18.79	10.20	9.74	9.97	14.91	14.00	14.47
<b>own account worker</b>										
7.	rural	25.04	29.68	27.27	2.86	5.41	4.09	14.12	17.60	15.84
8.	urban	18.41	19.47	18.96	2.33	2.76	2.56	10.77	11.51	11.16
9.	all-India	24.05	27.93	25.94	2.78	4.98	3.86	13.64	16.67	15.12
<b>unpaid household labour</b>										
10.	rural	14.72	11.97	13.40	19.57	15.62	17.67	17.11	13.77	15.50
11.	urban	4.79	3.39	4.06	4.03	4.01	4.02	4.43	3.68	4.04
12.	all-India	13.24	10.50	11.90	17.39	13.75	15.61	15.27	12.10	13.72
<b>total employed</b>										
13.	rural	58.05	58.76	58.39	33.03	31.46	32.28	45.72	45.27	45.50
14.	urban	53.91	51.76	52.79	14.96	14.54	14.74	35.42	34.02	34.69
15.	all-India	57.42	57.56	57.49	30.49	28.73	29.63	44.23	43.42	43.83
<b>unemployed seeking employment for the first time</b>										
16.	rural	0.77	0.17	0.48	0.01	0.04	0.02	0.39	0.11	0.25
17.	urban	1.77	1.04	1.39	0.10	0.12	0.11	0.98	0.60	0.78
18.	all-India	0.92	0.32	0.63	0.02	0.05	0.03	0.48	0.19	0.34
<b>other unemployed seeking employment</b>										
19.	rural	0.21	0.15	0.18	0.01	0.04	0.02	0.11	0.10	0.11
20.	urban	1.32	1.16	1.24	0.13	0.20	0.17	0.75	0.71	0.73
21.	all-India	0.38	0.32	0.35	0.03	0.07	0.05	0.21	0.20	0.21
<b>total unemployed seeking employment</b>										
22.	rural	0.98	0.32	0.66	0.02	0.08	0.04	0.50	0.21	0.35
23.	urban	3.09	2.20	2.63	0.23	0.32	0.28	1.73	1.31	1.51
24.	all-India	1.30	0.64	0.98	0.05	0.12	0.08	0.69	0.39	0.55
<b>total labour force</b>										
25.	rural	59.03	59.08	59.05	33.05	31.54	32.32	46.22	45.48	45.86
26.	urban	57.00	53.96	55.42	15.19	14.86	15.02	37.15	35.33	36.20
27.	all-India	58.72	58.20	58.47	30.54	28.85	29.71	44.92	43.81	44.38
<b>family members in domestic work</b>										
28.	rural	2.17	0.71	1.47	30.78	27.68	29.28	16.25	14.03	15.18
29.	urban	1.15	1.10	1.12	45.47	42.85	44.09	22.19	20.99	21.56
30.	all-India	2.01	0.77	1.40	32.84	30.12	31.51	17.11	15.19	16.17
<b>rentiers, pensioners and remittance holders</b>										
31.	rural	0.61	0.35	0.48	0.33	0.67	0.49	0.47	0.51	0.49
32.	urban	1.17	1.18	1.18	0.59	1.12	0.87	0.89	1.15	1.03
33.	all-India	0.69	0.50	0.60	0.36	0.74	0.55	0.53	0.62	0.57
<b>persons living on earnings from ungainful activity</b>										
34.	rural	0.55	0.40	0.48	0.65	0.31	0.49	0.60	0.35	0.48
35.	urban	0.54	0.36	0.45	0.78	0.30	0.53	0.65	0.33	0.48
36.	all-India	0.55	0.39	0.47	0.67	0.31	0.49	0.61	0.35	0.48
<b>others outside labour force</b>										
37.	rural	37.64	39.46	38.52	35.19	39.80	37.42	36.46	39.63	37.99
38.	urban	40.14	43.40	41.83	37.97	40.87	39.49	39.12	42.20	40.73
39.	all-India	38.03	40.14	39.06	35.59	39.98	37.74	36.83	40.03	38.40
<b>all activity status</b>										
40.	rural	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
41.	urban	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
42.	all-India	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
43.	(number of sample persons)	(15,655)	(25,012)	(40,667)	(14,720)	(24,165)	(38,885)	(30,375)	(49,177)	(79,552)

## SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

7.9. The rural-urban differentials in activity status proportions are of interest. While for males the proportion of the economically active in the urban sector is only a little lower than in the rural sector, for females this proportion in the urban sector is about half of what it is in the rural sector. For the NSS 6th and the 7th round combined, 58.47 per cent males are in labour force in all India, 50.05 per cent in the rural sector and 66.42 per cent in the urban sector; 29.71 per cent females are in the labour force in all India, 32.32 per cent in the rural sector and 15.02 per cent in the urban sector. Of the total population, male and female combined, 44.38 per cent are in labour force in all India, 45.86 per cent in the rural sector and 36.20 per cent in the urban sector. The proportion of the unemployed decreases slightly from the NSS 6th to the 7th round, but the difference cannot be taken as significant. In fact, as observed earlier, much reliance may not be placed on the unemployed proportions disclosed by these rounds, in which specific unemployment surveys were not done.

7.10. The distribution of population by activity status and sex in the rural population zones and the urban population size classes of towns, for the NSS 6th and the 7th round combined, is given in Table (7.4)<sup>1</sup>. Corresponding distributions for the individual rounds are given in the detailed tables in Appendix 9. The labour force proportions are seen to vary considerably between the rural population zones and the urban population size classes of towns. For the NSS 6th and the 7th round combined the rural gainfully employed proportion for males is the highest (62.08 per cent) in central zone; the male gainfully employed proportions of other population zones range between 56.59 per cent in west zone to 58.89 per cent in east zone. In the urban sector, the proportion of gainfully employed among males remains fairly steady, at the level of 51-53 per cent in the towns, to rise sharply to 57.02 per cent in the big cities. The proportion of gainfully employed among females is again the highest (44.88 per cent) in central zone; except in west zone (41.04 per cent), the proportion in the other zones is much lower, the least being in north zone (25.87 per cent). In the urban sector, the proportion of female gainfully employed population decreases systematically as the size class of towns increases, from 20.24 per cent in towns with population below 15 thousand to 6.91 per cent in the big cities.

7.11. The regional differences in gainfully employed proportions among females are not the effect of varying participation of housewives in household enterprises, but are indicative of real differences in the nature of female participation in economic activity. The aggregate proportion of females engaged either as unpaid household labour or in domestic work, which might have otherwise been expected to remain unchanged over the different regions, is seen to vary in the rural sector from 38.48 per cent in south zone to 55.94 per cent in north-west zone, and in the urban sector from 43.82 per cent in towns with population below 15 thousand to 54.04 per cent in towns with population of 50 thousand to one lakh. The higher

<sup>1</sup> Table (7.4) has actually been split into three tables by sex, Table (7.4)1 for males, Table (7.4)2 for females and Table (7.4)3 for male and female combined.



TABLE (7.41): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA RURAL AND URBAN ESTIMATED MALES  
(NSS 6th & 7th round combined)

activity status	rural zone							urban size class							all-India	
	north			central			all-India rural	all-India urban	below 15,000		15,000-50,000		50,000-100,000			above 100,000
	(2)	(3)	(4)	(5)	(6)	(7)			(8)	(9)	(10)	(11)	(12)	(13)		
1. employer	0.70	0.82	0.91	1.61	1.44	0.03	0.91	0.59	0.55	0.51	0.23	0.82	0.69	0.86		
2. employee	9.82	19.65	23.64	14.21	19.65	8.23	16.81	29.18	24.34	27.01	30.76	28.88	40.97	18.79		
3. own account worker	31.77	25.83	23.90	24.77	27.19	30.99	27.27	18.96	21.47	20.63	27.32	18.74	13.24	25.94		
4. unpaid household labour	15.25	12.59	8.83	16.00	13.80	17.46	13.40	4.06	6.58	3.66	3.97	2.95	2.12	11.90		
5. total employed	57.54	58.89	57.28	56.59	62.08	56.71	58.39	52.79	52.94	51.81	52.28	51.39	57.02	57.49		
6. unemployed seeking employment for the first time	0.40	0.46	0.97	0.19	0.23	0.45	0.48	1.39	0.67	1.20	1.65	1.30	2.94	0.63		
7. other unemployed seeking employment	0.11	0.20	0.40	0.07	0.05	0.16	0.18	1.24	0.58	1.00	1.62	1.31	2.41	0.35		
8. total unemployed seeking employment	0.51	0.66	1.37	0.26	0.28	0.61	0.66	2.63	1.25	2.20	3.27	2.61	5.35	0.98		
9. total labour force	58.05	59.55	58.65	56.85	62.36	57.32	59.05	55.42	54.19	54.01	55.55	54.00	62.37	58.47		
10. family members in domestic work	2.19	1.34	1.93	0.52	0.93	1.17	1.47	1.12	1.16	1.06	1.14	1.03	1.30	1.40		
11. rentiers, pensioners and remittance holders	0.23	0.22	0.66	0.52	0.83	0.71	0.48	1.18	1.07	0.78	1.34	1.45	1.46	0.60		
12. persons living on earnings from ungainful activities	0.22	0.55	0.54	0.46	0.38	0.85	0.48	0.45	0.60	0.29	0.84	0.35	0.25	0.47		
13. others outside labour force	39.31	38.34	38.22	41.65	35.50	39.95	38.52	41.83	42.98	43.86	41.13	43.17	34.62	39.06		
14. all activity status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
15. (number of sample persons)	(5,563)	(8,013)	(5,396)	(4,519)	(4,846)	(4,305)	(3,2647)	(8,920)	(1,422)	(1,477)	(1,157)	(2,162)	(1,802)	(40,667)		

TABLE (7.42): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS IN THE RURAL POPULATION ZONES  
AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL INDIA RURAL AND URBAN ESTIMATED FEMALES  
(NSS 6th & 7th round combined)

activity status	rural zone						urban size class								all India
	north	east	south	west	central	north-west	all India rural	all India urban	below 15,000	15,000 < 50,000	50,000 < 100,000	100,000 above	all India		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1. employer	0.28	0.10	0.20	0.37	0.28	0.12	0.21	0.05	—	0.14	—	0.48	—	0.19	
2. employee	4.21	8.33	17.31	10.53	16.40	2.85	10.31	8.11	11.67	8.85	5.52	6.33	3.03	9.97	
3. own account worker	4.29	5.26	4.85	1.95	2.87	2.99	4.09	2.56	1.72	3.60	2.13	1.97	0.92	3.86	
4. unpaid household labour	17.09	13.43	10.64	28.19	25.33	23.71	17.67	4.02	6.85	1.24	4.33	1.40	0.96	15.61	
5. total employed	25.87	27.12	32.40	41.04	44.88	29.67	32.28	14.74	20.24	16.83	12.28	9.78	6.91	29.63	
6. unemployed seeking employment for the first time	0.04	0.01	0.07	—	—	—	0.02	0.11	0.02	0.09	—	0.26	0.09	0.03	
7. other unemployed seeking employment	—	0.05	0.05	0.02	0.04	—	0.02	0.17	0.17	0.21	0.15	0.05	0.22	0.04	
8. total unemployed seeking employment	0.04	0.06	0.12	0.02	0.04	—	0.04	0.28	0.19	0.30	0.15	0.31	0.27	0.08	
9. total labour force	25.91	27.18	32.52	41.06	44.92	29.67	32.32	15.02	20.43	17.13	12.43	10.09	7.18	29.71	
10. family members in domestic work	35.72	34.03	28.44	17.61	19.78	32.23	29.28	44.09	26.97	43.02	49.70	47.00	48.80	37.01	
11. rentiers, pensioners and remittance holders	0.21	0.32	0.77	0.99	0.59	0.40	0.40	0.87	1.05	0.62	0.49	0.90	0.49	0.50	
12. persons living on earnings from unskilled activities	0.33	0.64	0.63	0.54	0.26	0.46	0.49	0.53	0.51	0.47	0.63	0.42	0.66	0.49	
13. others outside labour force	37.83	37.83	37.64	39.88	34.45	37.34	37.42	49.49	41.04	38.96	36.74	40.24	45.78	37.76	
14. all activity status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
15. (number of sample persons)	(5,353)	(7,854)	(5,444)	(4,539)	(4,655)	(3,829)	(11,992)	(7,425)	(1,900)	(1,567)	(1,614)	(2,040)	(1,440)	(3,000)	

TABLE (7.93): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS CATEGORIES IN THE TOTAL POPULATION AND IN THE URBAN POPULATION SIZE CLASSES OF TOWNS ALL INDIA RURAL AND URBAN POPULATION TOWNS (NSS 6th & 7th round combined)

activity status	rural zone										urban zone									
	north		east		west		central		south		all India rural		all India urban		15,000 < 50,000		50,000 < 100,000		100,000 above	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1. employer		0.49	0.47	0.35	0.56	0.88	0.88	0.66	0.35	0.38	0.43	0.38	0.43	0.38	1.26	1.26	1.41	1.41	1.41	1.41
2. employee		7.07	14.05	20.43	12.36	18.07	8.71	23.00	19.16	18.11	19.16	18.11	19.16	18.11	8.86	8.86	8.86	8.86	8.86	8.86
3. own account worker		18.29	16.67	14.22	13.34	15.37	17.83	15.84	11.16	15.44	11.16	15.44	11.16	15.44	12.48	12.48	12.48	12.48	12.48	12.48
4. unpaid household labour		16.16	13.00	9.44	22.10	19.10	20.10	15.50	4.01	6.98	4.01	6.98	4.01	6.98	3.63	3.63	4.14	4.14	4.14	4.14
5. total employed		42.01	43.19	44.64	48.79	53.72	44.01	47.50	34.65	37.84	34.65	37.84	34.65	37.84	33.86	33.86	36.49	36.49	36.49	36.49
6. unemployed seeking employment for the first time		0.22	0.24	0.32	0.10	0.12	0.24	0.25	0.78	0.48	0.78	0.48	0.78	0.48	0.66	0.66	0.87	0.87	0.87	0.87
7. other unemployed seeking employment		0.06	0.13	0.22	0.06	0.05	0.09	0.11	0.73	0.40	0.73	0.40	0.73	0.40	0.61	0.61	0.92	0.92	0.92	0.92
8. total unemployed seeking employment		0.28	0.37	0.54	0.16	0.17	0.33	0.36	1.51	0.88	1.51	0.88	1.51	0.88	1.27	1.27	1.79	1.79	1.79	1.79
9. total labour force		42.29	43.56	45.38	48.94	53.89	44.34	47.86	36.20	38.62	36.20	38.62	36.20	38.62	35.13	35.13	38.28	38.28	38.28	38.28
10. family members in domestic work		18.63	17.49	15.39	9.10	10.09	15.77	15.18	21.06	18.51	21.06	18.51	21.06	18.51	21.64	21.64	24.00	24.00	24.00	24.00
11. rentiers, pensioners and annuitants holders		0.22	0.27	0.72	0.70	0.71	0.37	0.49	1.03	1.41	1.03	1.41	1.03	1.41	0.50	0.50	0.94	0.94	0.94	0.94
12. persons living on earnings from ungainful activities		0.28	0.59	0.58	0.50	0.32	0.62	0.48	0.48	0.50	0.48	0.50	0.48	0.50	0.38	0.38	0.74	0.74	0.74	0.74
13. others outside labour force		38.58	38.09	37.93	40.76	34.99	38.70	37.99	40.73	41.06	40.73	41.06	40.73	41.06	41.11	41.11	40.06	40.06	40.06	40.06
14. all activity status		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
15. (number of sample persons)		(10,921)	(15,867)	(10,840)	(9,049)	(9,501)	(8,131)	(64,309)	(15,243)	(2,737)	(15,243)	(2,737)	(15,243)	(2,737)	(2,860)	(2,171)	(4,178)	(3,248)	(79,552)	(79,552)



# THE TOWNSHIP TRENDS OF THE ECONOMICALLY ACTIVE POPULATION

percentage of male employees in the total male working and seeking force of basic employees in the two south and central towns and of female employees in the town in the north, west, central and south-west towns may also be noted. The general tendency of increase in the percentage of basic employees and the increase of female employees with increasing urbanization rate is also interesting.

(12) In Table (7) is the percentage distribution of population by activity status and sex for the NSS 6th and 7th round and the Preliminary Survey of Urban Unemployment conducted in September, 1953 (excluding the census to towns).

TABLE (7.5) PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX IN TOWNS WITH POPULATION 10 THOUSAND ABOVE EXCLUDING THE BIG CITIES: ESTIMATED PERCENTS

(Urban Unemployment Survey, September, 1953 and NSS 6th & 7th round)

activity status	male			female			total		
	6	19	79	6	19	79	6	19	79
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. employer	0.23	0.04	0.21	—	0.07	0.11	0.20	0.07	0.07
2. employee	21.46	23.34	27.75	0.36	0.23	2.00	10.63	17.00	17.20
3. own account worker	17.30	19.23	19.14	1.90	3.17	2.23	9.00	11.00	11.10
4. unpaid household worker	4.00	3.00	3.00	1.00	2.00	2.00	3.00	3.00	3.00
5. total employed	42.99	45.61	50.10	2.26	5.47	6.34	22.83	33.07	34.37
6. unemployed seeking employment for the first time	1.03	1.94	1.23	0.16	0.23	0.19	0.93	1.17	0.73
7. other unemployed seeking employment	1.27	2.00	1.65	0.17	0.40	—	0.73	1.64	0.91
8. total unemployed seeking employment	2.30	3.94	2.88	0.33	0.63	0.19	1.66	2.81	1.64
9. total labour force	45.29	49.55	52.98	2.59	6.10	6.53	24.49	35.88	36.01
10. family members in domestic work	0.03	0.02	1.19	0.04	0.00	0.74	0.07	0.02	0.93
11. members, paid workers and supervisors	1.43	0.07	1.27	0.43	0.23	1.07	0.90	0.01	1.22
12. persons living on average from one person's earnings	0.76	0.45	0.30	1.47	1.27	0.24	1.00	0.67	0.20
13. persons outside labour force	40.31	43.00	44.25	30.76	40.21	41.64	35.73	41.28	42.07
14. all activity status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
15. number of sample persons	1,553	10,548	1,714	1,450	9,667	1,540	2,553	20,415	3,254

<sup>1</sup>NSS 6th round.

<sup>2</sup>NSS No.8, Report on Preliminary Survey of Urban Unemployment, September, 1953; percentage adjusted for "no record" cases.

<sup>3</sup>NSS 7th round.

with population 50 thousand above excluding the big cities, are brought together for facility of comparison. The proportion of gainfully employed males in the Preliminary Survey lies between the corresponding proportions for the NSS 6th and the 7th round while the proportion of unemployed males in the Preliminary Survey is higher than the corresponding proportions for the NSS 6th and the 7th round. In regard to female population, the proportions of gainfully employed and the unemployed are higher in the Preliminary Survey than in the NSS 6th and the 7th round. The labour force proportion of the urban population was of the same order in the Preliminary Survey and the NSS 6th round, but a little lower in the NSS 7th round.

7.13. *Labour force proportions in age groups* : The proportions of population in the labour force by sex in six broad age groups, are shown in Table (7.6), for the NSS 6th and the 7th round. Of the males below age 15, 12.52 per cent in all-India, 13.65 per cent in the rural sector and 5.80 per cent in the urban sector are in labour force. In the age group 15-24, 88.15 per cent of rural males and 70.32 per cent of urban males are in labour force. The gap in male labour force proportions between the two sectors is close in the age group 25-44, but for age 45-above, the rural proportions are again considerably higher than the urban proportions. Of the females below age 15, 7.11 per cent in all-India, 7.88 per cent in the rural sector and 2.59 per cent in the urban sector, are in the labour force : the rural-urban differential is much higher for females than for males in all age groups, excepting ages 65-above.

TABLE 7.6 PERCENTAGE OF POPULATION IN LABOUR FORCE BY AGE GROUP AND SEX : ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS

(NSS 6th & 7th round combined)

age group (years)	sector	male			female			total		
		6th round	7th round	combined	6th round	7th round	combined	6th round	7th round	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	0-14 rural	13.88	13.41	13.65	8.23	7.51	7.88	11.15	10.52	10.85
2.	" urban	7.26	4.45	5.80	2.47	2.69	2.59	4.93	3.58	4.23
3.	" all-India	12.99	12.03	12.52	7.45	6.76	7.11	10.31	9.45	9.89
4.	15-24 rural	88.09	88.22	88.15	48.38	46.77	47.63	67.58	67.12	67.36
5.	" urban	74.29	66.69	70.32	16.64	17.62	17.15	47.01	43.48	45.17
6.	" all-India	85.80	84.03	84.94	43.82	41.74	42.83	64.40	62.78	63.63
7.	25-34 rural	98.11	97.68	97.90	56.98	56.13	56.57	77.94	77.54	77.75
8.	" urban	97.70	96.70	97.16	24.60	25.01	24.81	63.43	64.54	64.02
9.	" all-India	98.05	97.50	97.77	52.23	51.01	51.63	75.73	75.26	75.50
10.	35-44 rural	97.53	97.30	97.45	60.43	57.40	58.96	79.55	77.79	78.70
11.	" urban	97.11	96.38	96.73	34.16	30.65	32.34	68.46	65.29	66.42
12.	" all-India	97.51	97.14	97.33	56.49	52.90	54.73	77.71	75.63	76.69
13.	45-64 rural	90.73	90.97	90.85	40.94	41.55	41.24	66.36	66.59	66.47
14.	" urban	87.85	87.93	87.89	25.13	23.72	24.39	59.38	57.76	58.54
15.	" all-India	90.29	90.47	90.38	38.80	38.84	38.82	65.35	65.19	65.27
16.	65-above rural	54.30	54.85	54.57	16.69	8.53	12.46	34.59	29.59	32.05
17.	" urban	57.58	37.38	46.26	11.69	11.33	11.50	35.05	24.90	29.42
18.	" all-India	54.80	51.56	53.15	16.01	8.95	12.32	34.65	28.80	31.64
19.	all ages rural	59.03	59.08	59.05	33.05	31.54	32.32	46.22	45.48	45.86
20.	" urban	57.00	53.96	55.42	15.19	14.86	15.02	37.15	35.33	36.20
21.	" all-India	58.72	58.20	58.47	30.54	28.85	29.71	44.92	43.81	44.38
22.	(number of sample persons)	(15,655)	(25,012)	(40,667)	(14,720)	(24,165)	(38,885)	(30,375)	(49,177)	(79,552)

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

7.14 The percentage distributions of the economic population and the unskilled labour force by sex at six broad age groups for the rural and the urban sectors separately are shown in Table (1.7). For the NSS and the Telangana combined. The distributions are brought together in the Table for comparison, it happens to demonstrate the relative contribution of each sex age group to the total labour force. Age group 25-34, containing 18.00 per cent of total population, supplies 24.00 per cent of the labour force, and age group 0-14, containing 40.71 per cent of total population, supplies 9.00 per cent of the labour force. Age groups 45-54 contribute a little more to the labour force than age group 45-54, although the latter group contains a little more population.

TABLE (1.7). PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE AND PROPORTION IN LABOUR FORCE IN AGE GROUPS BY SEX: ALL-INDIA, RURAL AND URBAN (combined)

(NSS and Telangana combined)

age group (years)	sector	rural			urban			total		
		per cent of population	per cent of labour force	proportion in labour force	per cent of population	per cent of labour force	proportion in labour force	per cent of population	per cent of labour force	proportion in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	0-14	41.83	9.05	14.46	40.62	8.71	14.25	41.22	8.88	14.35
2	..	36.79	7.87	11.89	36.08	6.71	11.77	36.44	7.29	11.83
3	..	41.05	8.79	12.92	40.68	8.61	12.12	40.87	8.69	12.59
4	15-19	9.02	12.23	80.91	9.85	13.43	44.67	9.44	17.92	61.09
5	..	10.34	10.67	54.78	10.32	6.79	13.49	10.33	11.20	51.82
6	..	9.22	11.90	75.46	9.91	13.11	59.81	9.56	12.57	72.74
7	20-24	9.04	14.74	96.28	9.69	12.78	52.35	9.36	14.06	72.28
8	..	10.48	16.36	80.11	10.50	14.68	59.78	10.49	15.48	66.32
9	..	9.28	14.98	94.39	9.80	15.20	46.59	9.54	15.08	70.53
10	25-34	15.03	24.92	97.99	14.50	20.73	58.67	14.87	22.85	95.76
11	..	16.36	28.69	97.16	15.25	22.89	54.81	15.81	25.87	94.02
12	..	15.24	25.19	97.77	14.78	20.05	51.65	15.01	22.92	95.39
13	35-44	10.84	17.80	97.45	10.58	16.70	58.36	10.71	17.28	95.76
14	..	11.59	20.07	96.73	11.37	24.68	55.74	11.48	22.64	96.42
15	..	10.95	18.22	97.33	10.69	19.68	54.75	10.82	18.96	96.04
16	45-54	12.03	18.51	99.85	11.95	15.74	41.24	11.99	17.28	69.47
17	..	11.94	18.94	87.89	11.31	18.77	54.39	11.64	18.85	78.94
18	..	12.02	18.58	90.38	11.85	15.48	38.82	11.94	17.03	69.27
19	65+									
20	above	2.21	2.04	54.57	2.61	1.61	12.46	2.41	1.68	52.05
21	..	2.39	2.00	46.26	2.48	1.80	11.59	2.44	1.68	50.42
22	..	2.24	2.04	53.15	2.59	1.68	12.32	2.41	1.72	51.64
23	all ages	100.00	100.00	50.05	100.00	100.00	32.72	100.00	100.00	42.86
24	..	100.00	100.00	55.42	100.00	100.00	15.02	100.00	100.00	36.96
25	..	100.00	100.00	58.47	100.00	100.00	29.71	100.00	100.00	44.38
26	(number of sample persons)	(40,667)			(34,885)			(75,552)		



7.15. The NSS percentage distribution of population and labour force to total population in age groups by sex and sector are shown graphically in Diagram (7.1).

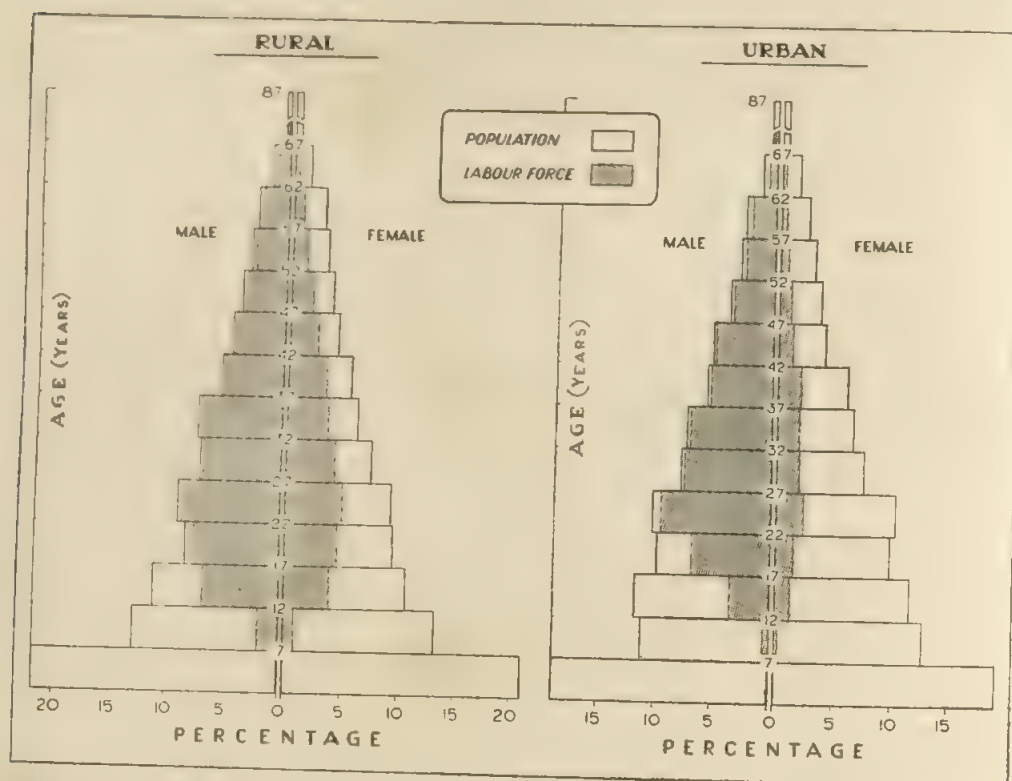


Diagram (7.1): Percentage distribution of population and labour force to total population in age groups by sex and sectors (NSS 6th and 7th round combined).

Source: Tables (7.7.2)1 and (7.7.2)2.

7.16. The percentages of population in labour force for four broad age groups in India (the NSS 6th and 7th round combined) are compared with those for the USA, the UK, Italy, and Japan in Table (7.8), the distribution for the latter countries being given for two reference periods 1930-31 and 1950-51. The concepts of labour force involved are not, however, uniform over time and countries, and only rough comparisons are permissible. The current proportion of economically active males in India (58.5 per cent) is seen to be of the same level as in the USA, slightly higher than in Japan (54.6 per cent), but at a lower level than in Italy and the UK (66.8 per cent). To the comparison between India and USA should be added the fact that while the proportion of population in labour force for each of the four age groups is considerably higher in India than in the USA, the latter country has—and this applies to the highly developed countries (as we have seen in para 5.9)—a much higher proportion of population in the ages where labour force participation is at a peak. The labour force proportions in age groups 20-64 are seen to be of the same order in the different countries but there are considerable variations in age

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groups 15-19 and 65-above. The current proportion of the economically active females in India (29.7 per cent) is lower than in Japan (33.1 per cent) but much higher than in the USA (21.5 per cent). Examining the shift over time for males, it is seen that except in Italy, the overall labour force proportions and also the proportions for each broad age group have fallen in 1950-51 as compared to 1930-31.

TABLE 7.8): PERCENTAGE OF POPULATION IN LABOUR FORCE BY AGE GROUP AND SEX IN DIFFERENT COUNTRIES<sup>1</sup>

country	year	age group (years)				totals <sup>2</sup>
		0-14	15-19	20-64	65-above	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>1: male</b>						
1. USA	1930	—	48.5	95.2	58.3	61.3
2. "	1950	—	39.8	89.7	41.6	58.0
3. UK	1931	—	85.2	97.0	47.9	69.0
4. "	1951	—	83.9	96.9	32.0	66.8
5. Italy	1931	—	88.2	96.3	72.6	66.4
6. "	1950	—	83.4	94.8	61.9	67.8 <sup>4</sup>
7. Japan	1930	4.1	78.5	95.3	63.0	58.8
8. "	1951	—	51.5	94.0	56.1	54.6 <sup>5</sup>
9. all-India <sup>3</sup>	1953-54	12.5	75.6	95.2	53.2	58.5
10. " rural	"	13.6	80.0	95.7	54.6	59.0
11. " urban	"	5.8	54.0	92.6	46.3	55.4
<b>2: female</b>						
1. USA	1930	—	27.3	26.2	8.0	17.7
2. "	1950	—	22.7	32.7	7.6	21.5
3. UK	1931	—	71.0	32.4	8.2	26.9
4. "	1951	—	78.4	36.0	5.3	27.2
5. Italy	1931	—	44.0	23.2	8.9	18.6
6. "	1950	—	50.6	30.3	11.5	24.9 <sup>4</sup>
7. Japan	1930	5.0	61.8	49.9	18.6	33.0
8. "	1951	—	47.7	52.9	24.0	33.1 <sup>5</sup>
9. all-India <sup>3</sup>	1953-54	7.1	39.3	48.0	12.3	29.7
10. " rural	"	7.9	44.1	52.1	12.5	32.3
11. " urban	"	2.6	13.5	25.6	11.5	15.0
<b>3: total</b>						
1. USA	1930	—	37.9	61.2	33.2	39.8
2. "	1950	—	31.2	60.8	23.3	39.5
3. UK	1931	—	78.1	62.9	25.3	47.0
4. "	1951	—	81.1	65.2	16.3	46.2
5. Italy	1931	—	66.1	58.1	39.3	41.9
6. "	1950	—	67.3	60.9	34.5	45.8 <sup>4</sup>
7. Japan	1930	4.5	70.3	72.9	37.7	46.0
8. "	1951	—	49.6	72.9	37.5	43.7 <sup>5</sup>
9. all-India <sup>3</sup>	1953-54	9.9	57.0	72.2	31.6	44.4
10. " rural	"	10.8	61.5	74.2	32.0	45.9
11. " urban	"	4.2	34.8	61.4	29.4	36.2

<sup>1</sup> Figures for countries other than India from *Year Book of Labour Statistics, 1938* and 1951-52, ILO; adjusted for presentation in uniform age groups.

<sup>2</sup> Includes persons economically active below age 15.

<sup>3</sup> NSS 6th and 7th round combined estimates.

<sup>4</sup> Based on 1951 population.

<sup>5</sup> Based on 1950 population.

Italy conforms to this generalisation for the age groups only, although the overall labour force proportion increases slightly owing to a shift in the age structure. For females, excepting age groups 15-19 and 65-above for the USA, 65-above for the UK and 15-19 for Japan, the proportions of population in labour force show an increase over time. The directions of the shifts in labour force proportions are of relevance in estimating the future pattern of labour force participation in India.

7.17. The treatment of unpaid household labour, specially females, differs considerably between countries and disturbs, perhaps more than anything else, international comparisons of labour force proportions. The female labour force proportions including and excluding unpaid household labour for different countries have, therefore, been compared in Table (7.9). The proportion of females in the labour force excluding unpaid household labour was generally higher in the more developed countries. When, however, unpaid household labour were included, the position was reversed and female labour force proportions went up higher for the less developed countries. Comparing the USA and India for example, the proportions of females in the labour force excluding unpaid household labour were 21.1 per cent in the USA as compared to 14.1 per cent in India, while the proportion including unpaid household labour remained about the same (21.8 per cent) in the USA, it more than doubled to rise to 29.7 per cent in India.

TABLE (7.9): PERCENTAGE OF FEMALE UNPAID HOUSEHOLD LABOUR AND PERCENTAGE ACTIVE AMONG FEMALES INCLUDING AND EXCLUDING UNPAID HOUSEHOLD LABOUR IN DIFFERENT COUNTRIES<sup>1</sup>

country	year	unpaid household labour as percent of all active females	percent active among females	
			including unpaid household labour	excluding unpaid household labour
(1)	(2)	(3)	(4)	(5)
1. USA	1950	2.9	21.8	21.1
2. Czechoslovakia	1947	44.2	32.9	18.4
3. Sweden	1950	2.9	23.3	22.7
4. Great Britain	1951	0.5	27.2	27.1
5. Japan	1950	60.4	33.0	13.1
6. Philippines	1948	55.1	31.0	13.9
7. all-India	1953-54	52.2	29.7	14.1
8. „ rural	„	54.6	32.3	14.7
9. „ urban	„	26.7	15.0	11.0

<sup>1</sup> Figures for countries other than India from Edith G. Adams (1954): "A Comparison of Recent Census Statistics on the Economically Active Population", World Population Conference, Rome, E/Conf. 13/308. Figures for India relate to NSS 6th and 7th round combined estimates.



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7.18. *Average present age by activity status.* The average ages of population by activity status, in the rural and the urban sectors, are shown in Table (7.10) for the NSS 7th round for males and females separately. As between the sectors, for males specially, the average ages in almost all the activity status groups are slightly higher in the urban sector than in the rural sector. The average age of the urban population as a whole is, however, also a little higher than the average age of the rural population. Among the gainfully employed, employers and own account workers have higher average present ages (42 and 38 years respectively) than employees (32 years) and unpaid household labour (26 years). The average age of family members in domestic work is understandably much higher for females (30 years) than for males (18 years).

TABLE (7.10): AVERAGE AGE AND PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX: ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS (NSS 7th round)

activity status	sector	male		female		total	
		average age (years)	percent-age of population	average age (years)	percent-age of population	average age (years)	percent-age of population
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. employer	rural	41.39	1.09	45.22	0.30	42.19	0.70
2. "	urban	44.37	0.72	44.50	0.04	44.38	0.39
3. "	all-India	41.74	1.03	45.20	0.26	42.42	0.65
4. employee	rural	30.89	16.02	31.70	10.13	31.19	13.11
5. "	urban	32.95	28.18	33.99	7.73	33.16	18.44
6. "	all-India	31.44	18.10	31.99	9.74	31.62	14.00
7. own account worker	rural	37.90	29.68	35.09	5.41	37.48	17.69
8. "	urban	37.87	19.47	36.08	2.76	37.67	11.31
9. "	all-India	37.90	27.93	35.18	4.98	37.50	16.67
10. unpaid household labour	rural	22.01	11.97	29.64	15.62	26.29	13.77
11. "	urban	25.59	3.39	32.09	4.91	28.92	3.68
12. "	all-India	22.20	10.50	29.75	13.75	26.42	12.10
13. total employed	rural	32.81	58.76	31.39	31.46	32.33	45.27
14. "	urban	34.47	51.76	33.89	14.54	34.35	34.02
15. "	all-India	33.07	57.56	31.59	28.73	32.69	43.42
16. unemployed seeking employment	rural	23.82	0.32	27.12	0.08	24.50	0.21
17. "	urban	26.83	2.20	25.68	0.32	26.70	1.31
18. "	all-India	25.57	0.64	26.53	0.12	25.72	0.39
19. family members in domestic work	rural	18.17	0.71	29.44	27.68	29.16	14.03
20. "	urban	17.89	1.10	30.33	42.85	29.99	20.99
21. "	all-India	18.10	0.77	29.64	30.12	29.34	15.19
22. others outside labour force	rural	6.67	40.21	6.77	40.78	6.72	40.49
23. "	urban	8.79	44.94	7.72	42.29	8.27	43.68
24. "	all-India	6.94	41.03	6.89	41.03	6.91	41.00
25. all activity status	rural	23.62	100.00	23.88	100.00	23.75	100.00
26. "	urban	24.44	100.00	23.90	100.00	24.19	100.00
27. "	all-India	23.76	100.00	23.88	100.00	23.82	100.00
28. (number of sample persons)		(25,012)		(24,165)		(49,177)	

7.19. *Duration in current activity status* : The average duration and the average age at entry in the current activity status for the gainfully employed are shown in Table (7.11), from the NSS 7th round. As between the sectors, the duration is slightly lower in the urban sector than in the rural sector in each activity status, for both males and females. The average duration in the current status is about 14 years for all gainfully employed persons. Employers and own account workers have the same average duration of 17 years, and for unpaid household labour and employees the duration is 11-12 years. Female employees and unpaid household labour have higher average durations, and female employers and own account workers lower average durations in the current activity status than males. The average age at entry into the current activity status was calculated by deducting the average duration from the average present age in the status. The average age at entry for all gainfully employed males is 19 years and for females 18 years. Employers have the highest average entry-age of 26, and unpaid household labour the lowest of 16, employees and own account workers coming in-between with about 20. Females have higher average entry-ages than males for the activity status employer and unpaid household labour.

TABLE (7.11) : AVERAGE AGE, AVERAGE DURATION AND AVERAGE AGE AT ENTRY IN CURRENT ACTIVITY STATUS BY SEX FOR THE GAINFULLY EMPLOYED POPULATION : ALL INDIA RURAL AND URBAN ESTIMATED PERSONS

(NSS 7th round)

activity status	sector	male			female			total		
		aver- age age (years)	aver- age dura- tion (years)	aver- age age at entry (years)	aver- age age (years)	aver- age dura- tion (years)	aver- age age at entry (years)	aver- age age (years)	aver- age dura- tion (years)	aver- age age at entry (years)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. employer	rural	41.39	18.12	23.27	45.22	15.61	29.61	42.19	17.61	24.58
2. "	urban	44.37	17.78	26.59	44.50	15.36	29.14	44.38	16.57	27.81
3. "	all-India	41.74	18.08	23.66	45.20	15.60	29.60	42.42	16.79	25.63
4. employee	rural	30.89	12.12	18.77	31.70	13.47	18.23	31.19	12.64	18.55
5. "	urban	32.95	10.31	22.64	33.99	12.13	21.86	33.16	10.68	22.48
6. "	all-India	31.44	11.64	19.80	31.99	13.30	18.69	31.62	12.21	19.41
7. own account worker	rural	37.90	18.37	19.53	35.09	14.60	20.49	37.48	17.81	19.67
8. "	urban	37.87	13.27	24.60	36.08	11.43	24.65	37.67	13.06	24.61
9. "	all-India	37.90	17.76	20.15	35.18	14.31	20.87	37.50	17.26	20.24
10. unpaid house- hold labour	rural	22.01	7.66	14.35	29.64	13.41	16.23	26.29	10.88	15.41
11. "	urban	25.50	7.93	17.57	32.09	12.26	19.83	28.92	10.11	18.81
12. "	all-India	22.20	7.68	14.52	29.75	13.36	16.39	26.42	10.84	15.58
13. all employed	rural	32.81	14.50	18.31	31.39	13.66	17.73	32.33	14.21	18.12
14. "	urban	34.47	11.37	23.10	33.89	12.03	21.86	34.35	11.50	22.85
15. "	all-India	33.07	14.02	19.05	31.59	13.53	18.06	32.59	13.86	18.73
16. (number of sample persons)		(14,123)			(6,768)			(20,891)		

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

7.20 The distribution of the gainfully employed *sexes* by duration in the current activity status, for both the rural and the urban sectors, is shown in Table (7.12) from the NSS 7th round. The durations appertain to the status found at the time of survey and do not give the total life period in gainful employment or economic activity. Even with this limitation the distribution reveals interesting information.

TABLE 7.12 PERCENTAGE OF GAINFULLY EMPLOYED POPULATION IN DURATION OF ACTIVITY STATUS GROUPS : ALL-INDIA RURAL AND URBAN ESTIMATED MALES

(NSS 7th round)

activity status	sector	duration of activity status						all durations	average duration (years)	percentage of population
		0-1 years	1-2 years	2-4 years	4-7 years	7-12 years	12 years above			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. employer	rural	3.58	3.26	9.27	8.38	14.19	61.32	100.00	18.12	1.09
2. "	urban	6.25	2.88	2.88	17.79	12.96	57.22	100.00	17.78	0.72
3. "	all-India	3.89	3.22	8.52	9.48	14.05	60.84	100.00	18.08	1.03
4. employee	rural	10.19	10.02	12.98	11.74	16.95	38.12	100.00	12.12	16.02
5. "	urban	10.33	9.19	14.54	17.69	17.31	30.94	100.00	10.31	28.18
6. "	all-India	10.23	9.80	13.39	13.32	17.04	36.22	100.00	11.64	18.10
7. own account										
worker	rural	3.29	4.07	6.77	8.29	13.94	63.64	100.00	18.37	29.68
8. "	urban	9.00	7.72	11.45	13.16	17.07	41.60	100.00	13.27	19.47
9. "	all-India	3.97	4.50	7.33	8.87	14.32	61.01	100.00	17.76	27.93
10. unpaid house-										
hold labour	rural	10.88	16.07	20.35	15.75	18.28	18.67	100.00	7.66	11.97
11. "	urban	14.33	10.39	13.32	22.40	19.27	20.29	100.00	7.93	3.39
12. "	all-India	11.08	15.75	19.96	16.12	18.33	18.76	100.00	7.68	10.50
13. all employed	rural	6.72	8.10	11.25	10.74	15.64	47.55	100.00	14.50	58.76
14. "	urban	10.04	8.63	13.14	16.30	17.29	34.60	100.00	11.37	51.76
15. "	all-India	7.22	8.18	11.54	11.59	15.90	45.57	100.00	14.02	57.56
16. (number of sample persons)										(14,123)



7.21. *Working life expectancy*—The average age of separation from labour force is socially important. Separation from labour force may be caused by death or earlier, mostly for females, by marriage, voluntary retirement or infirmity. Without going into the constituent causes, on basis of Census 1951 mortality assumption and NSS 6th and 7th round combined age group specific labour force proportions, the average future life in the labour force and the average age at separation from labour force were calculated for the Indian males and females. The method followed is described in Appendix 3. The results are shown in Table (7.13) along with comparative figures for the USA males (1939 US Abridged Life Table mortality and 1940 labour force figures), and New Zealand males (New Zealand Life Tables and Census 1951). It will be seen that an Indian male now aged 15 may expect a further working life of 33 years, while his complete expectation of life is 36 years more; at age 25, he may expect a further working life of 27 years, with a total expectation of life of 30 years more. The gap between the complete expectation of life and the expectation of working life fluctuates within a narrow band of 2.5 to 2.9 years for males aged 20-45, at ages 15 and 65 the gap widens to about 4 years. For the USA males the gap is almost constant throughout the age range 15-46, being of the order of 6 years; at age 65 the gap becomes 5 years. The different patterns of male working life expectancy in relation to total life expectancy in the two countries are due to the low average life span of the Indian, and the greater spread of his participation in the labour force.

7.22. The pattern of expectancy of working life of the Indian females is different from that of the males, as could have been expected from the different nature of their participation in the labour force. A female aged 15, with a total expectation of life of 37 years more, was expected to be in the labour force for another 16 years only, while a female aged 25, with a total expectation of life 29 years more, was expected to have a future working life of 13 years. The gap between the total expectation of life and the expectation of working life for the females regularly decreased with age, being 20 years for females aged 15 and 8 years for females aged 65. This trend is probably occasioned by movement of females into the activity of house-keeping. Except at age 65, the expectation of working life for females is about half of that of males.

7.23. The ratio of working life-time to the total life-time decreases for the USA males from 0.89 at age 15, to 0.56 at age 65, for New Zealand males from 0.84 at age 15 to 0.28 at age 65 and for Indian males from 0.90 at age 15 and 0.92 at age 25, to 0.54 at age 65. The proportion is thus much higher for Indian males, only exception in this respect being the USA males aged 65. For Indian females, however, the proportion of working life-time to the total life-time is 0.44 at age 15, 0.45 at age 25 and 0.12 at age 65.

TABLE 7.13: AVERAGE AGE AT SEPARATION FROM LABOUR FORCE, AVERAGE YEARS IN LABOUR FORCE, AND EXPECTATION OF LIFE: USA AND NEW ZEALAND MALES AND FEMALES

USA: males <sup>1</sup>				New Zealand: males				New Zealand: females				New Zealand: males and females			
age (years)	average age at separation	comp. exp. of life	col. (3)	age at separation	comp. exp. of life	col. (4)	col. (5)	age at separation	comp. exp. of life	col. (6)	col. (7)	age at separation	comp. exp. of life	col. (8)	col. (9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
15	60.7	45.7	51.3	0.89	60.8	45.8	44.4	0.84	47.6	40.4	37.8	40.4	37.8	40.4	37.8
20	61.1	41.1	46.8	0.88	61.1	41.1	39.6	0.87	46.4	39.4	36.8	39.4	36.8	39.4	36.8
25	61.7	36.7	42.4	0.87	61.7	36.7	34.4	0.81	45.2	38.2	35.6	38.2	35.6	38.2	35.6
30	62.8	31.8	37.7	0.86	62.8	31.8	30.4	0.79	44.0	37.0	34.4	37.0	34.4	37.0	34.4
35	64.7	26.7	32.5	0.85	64.7	26.7	25.6	0.78	42.8	35.8	33.2	35.8	33.2	35.8	33.2
40	71.8	21.8	27.2	0.84	71.8	21.8	20.4	0.77	41.6	34.6	32.0	34.6	32.0	34.6	32.0
45	71.8	16.8	22.2	0.83	71.8	16.8	15.4	0.76	40.4	33.4	30.8	33.4	30.8	33.4	30.8

<sup>1</sup> Wool, Harold (1950). The Pattern of Working Life for Men. *Monthly Labor Review*, Vol. 21, No. 2, U.S. Department of Statistics. Estimates based on U.S. Bureau of the Census, U.S. *Abstracts of Life Tables, 1929, 1939, 1949, 1959, 1969, 1979, 1989, 1999, 2009, 2019, 2029, 2039, 2049, 2059, 2069, 2079, 2089, 2099, 2109, 2119, 2129, 2139, 2149, 2159, 2169, 2179, 2189, 2199, 2209, 2219, 2229, 2239, 2249, 2259, 2269, 2279, 2289, 2299, 2309, 2319, 2329, 2339, 2349, 2359, 2369, 2379, 2389, 2399, 2409, 2419, 2429, 2439, 2449, 2459, 2469, 2479, 2489, 2499, 2509, 2519, 2529, 2539, 2549, 2559, 2569, 2579, 2589, 2599, 2609, 2619, 2629, 2639, 2649, 2659, 2669, 2679, 2689, 2699, 2709, 2719, 2729, 2739, 2749, 2759, 2769, 2779, 2789, 2799, 2809, 2819, 2829, 2839, 2849, 2859, 2869, 2879, 2889, 2899, 2909, 2919, 2929, 2939, 2949, 2959, 2969, 2979, 2989, 2999, 3009, 3019, 3029, 3039, 3049, 3059, 3069, 3079, 3089, 3099, 3109, 3119, 3129, 3139, 3149, 3159, 3169, 3179, 3189, 3199, 3209, 3219, 3229, 3239, 3249, 3259, 3269, 3279, 3289, 3299, 3309, 3319, 3329, 3339, 3349, 3359, 3369, 3379, 3389, 3399, 3409, 3419, 3429, 3439, 3449, 3459, 3469, 3479, 3489, 3499, 3509, 3519, 3529, 3539, 3549, 3559, 3569, 3579, 3589, 3599, 3609, 3619, 3629, 3639, 3649, 3659, 3669, 3679, 3689, 3699, 3709, 3719, 3729, 3739, 3749, 3759, 3769, 3779, 3789, 3799, 3809, 3819, 3829, 3839, 3849, 3859, 3869, 3879, 3889, 3899, 3909, 3919, 3929, 3939, 3949, 3959, 3969, 3979, 3989, 3999, 4009, 4019, 4029, 4039, 4049, 4059, 4069, 4079, 4089, 4099, 4109, 4119, 4129, 4139, 4149, 4159, 4169, 4179, 4189, 4199, 4209, 4219, 4229, 4239, 4249, 4259, 4269, 4279, 4289, 4299, 4309, 4319, 4329, 4339, 4349, 4359, 4369, 4379, 4389, 4399, 4409, 4419, 4429, 4439, 4449, 4459, 4469, 4479, 4489, 4499, 4509, 4519, 4529, 4539, 4549, 4559, 4569, 4579, 4589, 4599, 4609, 4619, 4629, 4639, 4649, 4659, 4669, 4679, 4689, 4699, 4709, 4719, 4729, 4739, 4749, 4759, 4769, 4779, 4789, 4799, 4809, 4819, 4829, 4839, 4849, 4859, 4869, 4879, 4889, 4899, 4909, 4919, 4929, 4939, 4949, 4959, 4969, 4979, 4989, 4999, 5009, 5019, 5029, 5039, 5049, 5059, 5069, 5079, 5089, 5099, 5109, 5119, 5129, 5139, 5149, 5159, 5169, 5179, 5189, 5199, 5209, 5219, 5229, 5239, 5249, 5259, 5269, 5279, 5289, 5299, 5309, 5319, 5329, 5339, 5349, 5359, 5369, 5379, 5389, 5399, 5409, 5419, 5429, 5439, 5449, 5459, 5469, 5479, 5489, 5499, 5509, 5519, 5529, 5539, 5549, 5559, 5569, 5579, 5589, 5599, 5609, 5619, 5629, 5639, 5649, 5659, 5669, 5679, 5689, 5699, 5709, 5719, 5729, 5739, 5749, 5759, 5769, 5779, 5789, 5799, 5809, 5819, 5829, 5839, 5849, 5859, 5869, 5879, 5889, 5899, 5909, 5919, 5929, 5939, 5949, 5959, 5969, 5979, 5989, 5999, 6009, 6019, 6029, 6039, 6049, 6059, 6069, 6079, 6089, 6099, 6109, 6119, 6129, 6139, 6149, 6159, 6169, 6179, 6189, 6199, 6209, 6219, 6229, 6239, 6249, 6259, 6269, 6279, 6289, 6299, 6309, 6319, 6329, 6339, 6349, 6359, 6369, 6379, 6389, 6399, 6409, 6419, 6429, 6439, 6449, 6459, 6469, 6479, 6489, 6499, 6509, 6519, 6529, 6539, 6549, 6559, 6569, 6579, 6589, 6599, 6609, 6619, 6629, 6639, 6649, 6659, 6669, 6679, 6689, 6699, 6709, 6719, 6729, 6739, 6749, 6759, 6769, 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17239, 17249, 17259, 17269, 17279, 17289, 17299, 17309, 17319, 17329, 17339, 17349, 17359, 17369, 17379, 17389, 17399, 17409, 17419, 17429, 17439, 17449, 17459, 17469, 17479, 17489, 17499, 17509, 17519, 17529, 17539, 17549, 17559, 17569, 17579, 17589, 17599, 17609, 17619, 17629, 17639, 17649, 17659, 17669, 17679, 17689, 17699, 17709, 17719, 17729, 17739, 17749, 17759, 17769, 17779, 17789, 17799, 17809, 17819, 17829, 17839, 17849, 17859, 17869, 17879, 17889, 17899, 17909, 17919, 17929, 17939, 17949, 17959, 17969, 17979, 17989, 17999, 18009, 18019, 18029, 18039, 18049, 18059, 18069, 18079, 18089, 18099, 18109, 18119, 18129, 18139, 18149, 18159, 18169, 18179, 18189, 18199, 18209, 18219, 18229, 18239, 18249, 18259, 182*

7.24. The average years in labour force and the proportion of working to total life expectancy at the six typical ages are shown graphically in Diagram (7.2).

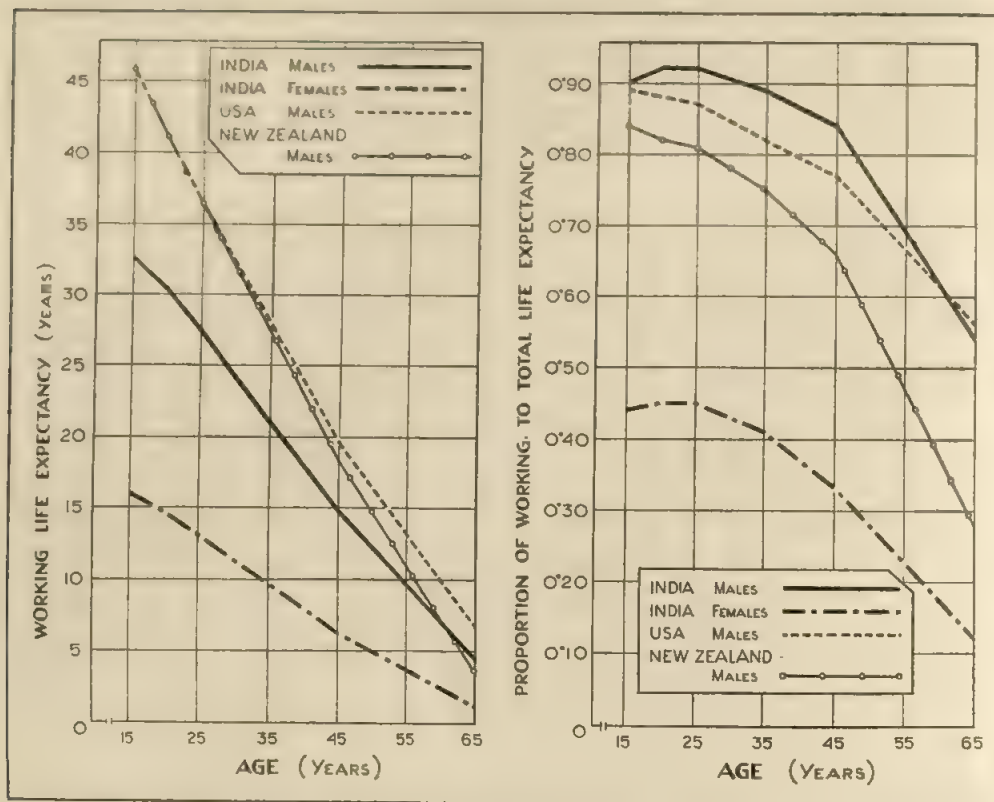


Diagram (7.2) : The average years in labour force and the propotion of working to total life expectancy at the six typical ages.

Source : Table (7.13).



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

## CHAPTER EIGHT

### INDUSTRY AND OCCUPATION

8.1. The deployment pattern of the gainfully employed population into the different branches of economic activity is an indicator of the nature and level of development. The classification by industry specifies the sector of economy, and that by occupation the type of activity within the sector. The distribution of gainfully employed persons in industries and occupations is the subject matter of this chapter. The NSS industry-occupation classification has been undergoing modifications over the NSS rounds covered. Attempts were made to fall in line with international recommendations about the classification without losing the distinguishing national features. A brief note on NSS industry-occupation classification is given in Appendix 4.

8.2. *Distribution by industry* : Table (8.1) gives the distribution of the gainfully employed in 16 industry groups for the rural and the urban sectors from the

TABLE (8.1) : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN INDUSTRIES BY SEX : ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS (NSS 7th round)

industry	rural			urban		
	male	female	total	total	male	female
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. production of cereals	74.78	80.05	76.60	19.93	16.85	31.89
2. production of pulses	0.26	0.39	0.30	—	—	—
3. production of money crop, jute and cotton	0.45	0.32	0.40	—	—	—
4. other agricultural production	1.12	0.98	1.07	1.77	1.59	2.43
5. production of plantation crops	0.20	0.26	0.22	—	—	—
6. forestry, fishery, livestock	6.13	3.41	5.20	4.21	3.79	5.83
7. all agricultural industries (1—6 sub-total)	82.94	85.41	83.79	25.91	22.23	40.15
8. mining	0.38	0.15	0.30	0.54	0.58	0.41
9. manufacture of food products	1.08	1.92	1.36	5.80	5.50	6.95
10. manufacture of textiles	1.59	3.84	2.35	9.40	9.22	10.09
11. other manufacturing	3.63	2.22	3.15	8.68	9.97	3.68
12. manufacturing (9—11 sub-total)	6.30	7.98	6.86	23.88	24.69	20.72
13. construction and sanitary services	1.10	0.66	0.95	3.63	3.99	2.23
14. trade and commerce	2.77	1.30	2.27	14.01	16.61	3.93
15. transport and communication	0.88	0.08	0.61	6.60	8.15	0.61
16. public services	0.77	0.04	0.52	5.77	7.19	0.30
17. professional services	3.16	3.60	3.31	15.41	13.00	24.75
18. public and professional services (16—17 sub-total)	3.93	3.64	3.83	21.18	20.19	25.05
19. others	1.70	0.78	1.39	4.25	3.56	6.90
20. all industries	100.00	100.00	100.00	100.00	100.00	100.00
21. (number of sample persons)	(12,012)	(6,278)	(18,290)	(2,601)	(2,111)	(490)

NSS 7th round. Of the total gainfully employed in each sector, 83.79 per cent in the rural sector and 25.91 per cent in the urban sector were engaged in agricultural and related industries; production of cereals constituted the bulk of the employed in the agricultural and related industries (76.60 per cent and 19.93 per cent of the total gainfully employed in the rural and urban sectors respectively). Forestry, fishery and livestock constituted the next important industry group after production of cereals in the rural sector. In this sector, the main non-agricultural industries were manufacturing (of food products, textiles etc.), public and professional services and trade and commerce. In the urban sector, manufacturing (23.88 per cent of the gainfully employed), public and professional services (21.18 per cent), trade and commerce (14.01 per cent) and transport and communication were the important non-agricultural occupations. The substantial proportion of the gainfully employed engaged in agricultural industries even in the urban areas and the comparatively high proportion of females in such industry groups as production of cereals, professional services and manufacture of textiles may be noted.

8.3. *Distribution by occupation* : The distribution of the gainfully employed in 19 occupational groups for the rural and the urban sectors is shown in Table (8.2) from the NSS 7th round. The cleavage between the two sectors is equally marked here as was for the distribution by industry groups. Of the total gainfully employed, 76.11 per cent in all-India, 83.51 per cent in rural and 26.11 per cent in the urban sectors had agricultural and related occupations, of whom cultivators in all-India and the rural sector (41.14 per cent and 46.03 per cent respectively) and agricultural labour in the urban sector (10.80 per cent) constituted the major portion. In all-India the other important non-agricultural occupations were: operatives and artisans, all administrative and technical work and unskilled labour. The proportions of operatives and artisans and all administrative and technical workers, sales and related occupations and unskilled labour were proportionately more in the urban sector than in the rural. In both the sectors a higher proportion of the employed females works as agricultural labour; a higher proportion of female unskilled labour is also observed in the urban sector. On the other hand, a lower proportion of females comes in the administrative and technical work and as operatives and artisans.

8.4. *Distribution by occupation within industries* : The percentage distribution of the gainfully employed by occupation groups for the different industry groups, for the rural and the urban sectors, is given in Table (8.5.7) of Appendix 0. It will be seen from that table that in the rural sector, of all those engaged in the production of cereals, 61.34 per cent are cultivators, 26.66 per cent agricultural labour, 6.15 per cent share-croppers, and 5.40 per cent forestry, fishery, livestock workers. In the rural sector, of the persons employed in professional services, 40.27 per cent are washermen, barbers and cooks, 14.38 per cent administrative and technical workers and 8.46 per cent are peons, cleaners, and scavengers. In the urban sector, of the persons engaged in the production of cereals 48.85 per cent are agricultural labour, 39.47 per cent cultivators, 6.22 per cent forestry, fishery, livestock workers and 5.74

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 8.20. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN OCCUPATION GROUPS BY SEX : ALL-INDIA RURAL AND URBAN  
ESTIMATED PERSONS

(NSS 7th round)

occupation	rural			urban			all-India		
	male	female	total	male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. medical work	0.09	0.15	0.11	1.04	0.77	0.90	0.23	0.20	0.22
2. teaching	0.42	0.26	0.36	1.32	3.30	1.71	0.56	0.50	0.54
3. administrative and technical work	1.62	0.40	1.21	14.10	1.61	11.59	3.62	0.49	2.55
4. peon, cleaner, scavenger	1.36	0.92	1.20	10.07	6.50	9.36	2.66	1.37	2.26
5. supervisory work on plant and machinery	0.01	—	0.01	0.26	—	0.21	0.05	—	0.03
6. operatives and artisans	4.96	2.90	4.26	17.33	5.79	15.03	6.84	3.14	5.65
7. washerman, barber, cook	1.41	1.51	1.45	3.12	7.29	3.95	1.67	1.98	1.77
8. services and related occupations (1-7 sub-total)	9.87	6.14	8.60	47.24	25.16	42.83	15.55	7.68	13.02
9. farmer	3.77	2.22	3.25	1.18	0.90	1.12	3.38	2.11	2.97
10. cultivator	47.41	43.33	46.03	7.89	9.17	8.14	41.40	40.58	41.14
11. share-cropper	5.52	3.48	4.83	1.04	1.43	1.13	4.84	3.32	4.35
12. agricultural labour	18.35	30.64	22.52	7.68	23.33	10.80	16.73	30.05	21.01
13. forestry, fishery, livestock workers	7.82	5.08	6.88	4.46	6.74	4.92	7.31	5.21	6.64
14. agricultural and related occupations (9-13 sub-total)	82.87	84.75	83.51	22.25	41.62	26.11	73.66	81.27	76.11
15. manufacturer of food products	0.85	2.05	1.27	3.02	5.43	3.50	1.19	2.32	1.55
16. manufacturer of textiles	0.88	3.20	1.66	4.75	7.91	5.38	1.46	3.57	2.14
17. building industry worker	0.56	0.05	0.39	1.88	0.93	1.69	0.76	0.12	0.55
18. manufacturer and building industry worker (15-17 sub-total)	2.29	5.30	3.32	9.65	14.27	10.57	3.41	6.01	4.24
19. hawker	0.68	0.56	0.64	2.81	0.50	2.35	1.00	0.56	0.86
20. retailer	1.90	0.73	1.50	7.95	3.52	7.07	2.82	0.96	2.22
21. wholesaler and financial operator	0.23	0.06	0.17	3.59	0.26	2.93	0.74	0.09	0.53
22. sales (19-21 sub-total)	2.81	1.35	2.31	14.35	4.28	12.35	4.56	1.61	3.61
23. unskilled labour	2.16	2.46	2.26	6.51	14.67	8.14	2.82	3.43	3.02
24. all occupations	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
25. (number of sample persons)	(12,012)	(6,278)	(18,290)	(2,111)	(490)	(2,601)	(14,123)	(67,68)	(20,891)



per cent share-croppers. In the urban sector of the total persons employed in non-professional services, 24.31 per cent are washermen, barbers and cooks, 20.91 per cent are unskilled labour, 17.79 per cent peons, cleaners and scavengers, 16.35 per cent are in administrative and technical work, 9.86 per cent in teaching and 5.77 per cent in medical work. A comparatively high proportion of unskilled labour (18.41 per cent) is observed in the transport and communication industries. As between males and females a higher proportion of agricultural labour among females has already been noticed. In the urban sector, the considerably higher proportion of unskilled labour among females in the professional services (43.61 per cent for females as against 10.25 per cent for males), and the remarkably lower proportion in administrative and technical work (1.50 per cent for females as against 23.33 per cent for males) are particularly worth noticing.

8.5. *Distribution of earners and earning dependants by occupation:* The distribution of the gainfully employed in household occupation groups by economic status was given in Chapter Six. Table (8.3) gives the percentage distribution of

TABLE (8.3) PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY ECONOMIC STATUS: ALL INDIA RURAL AND URBAN SAMPLE PERSONS

(NSS 4th round)

occupation	rural			urban		
	earner	earning dependant	all employed	all employed	earner	earning dependant
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. farmer	4.58	1.74	3.51	1.00	1.09	0.62
2. cultivator	43.73	47.55	45.17	4.02	3.16	7.25
3. share-cropper	6.54	5.51	6.15	1.37	1.22	1.95
4. agricultural labour	19.09	23.13	20.61	5.64	4.01	11.78
5. forestry, fishery, livestock workers	3.13	6.80	4.51	3.51	2.93	5.69
6. all agricultural occupations	77.07	84.73	79.95	15.54	12.41	27.29
7. manufacturer of food products	0.85	1.18	0.97	2.69	2.42	3.74
8. manufacturer of textiles	1.08	2.86	1.75	10.42	8.84	16.39
9. other manufacturers	1.95	1.46	1.77	4.02	3.93	4.37
10. construction and sanitary services	1.46	0.65	1.15	5.39	5.78	3.90
11. trade and commerce	3.02	1.34	2.39	12.63	13.62	8.89
12. transport and communication services	1.47	0.53	1.12	8.13	9.28	3.82
13. administrative and professional services	8.15	4.67	6.85	37.73	40.65	28.76
14. others	4.95	2.58	4.05	3.45	3.07	4.84
15. all non-agricultural occupations	22.03	15.27	20.05	84.46	87.59	72.71
16. all occupations	100.00	100.00	100.00	100.00	100.00	100.00
17. (number of sample persons)	(12,279)	(7,407)	(19,686)	(6,122)	(4,840)	(1,282)

the gainfully employed persons for their own active occupations in 14 occupation groups by economic status for the rural and the urban sectors from the NSS 7th round. In the rural sector of the total earners 15.79 per cent were occupation cultivator, 19.09 per cent agricultural labour, 8.13 per cent administrative and professional services and 6.51 per cent share-cropper. In the urban sector of the total earners, 40.65 per cent are in administrative and professional services, 13.07 per cent in occupation trade and commerce, 9.28 per cent in transport and communication services and 8.84 per cent are manufacturers of textiles. Among earning dependants, the proportions with occupations cultivator, agricultural labour and manufacturer of textiles are slightly higher in both the rural and urban sectors.

#### 8.6. *Distribution by occupation in population zones and size classes of towns*

Table (8.1) gives from the NSS 4th round the percentage distribution of the gainfully employed by 14 occupation groups for the six rural population zones and four urban size classes of towns. The proportion of gainfully employed with occupation cultivator is higher in rural north, north-west and west zones and comparatively lower in south zone. Agricultural labour claims the largest percentage, 31.34 per cent of the gainfully employed in south zone, and the lowest (8.25 per cent) in north-west zone. Administrative and professional services claim from 8.88 per cent of gainfully employed in south zone to 4.59 per cent in central zone. The proportion employed in administrative and professional services increases gradually over the size classes of towns, from 23.23 per cent in towns with population below 15 thousand to 49.08 per cent in the big cities. The proportion of persons in transport and communication services also increases regularly from 4.86 per cent in towns with population below 15 thousand to 11.48 per cent in the big cities. The proportion of agricultural labour on the other hand decreases regularly from 14.81 per cent in towns with population below 15 thousand to 0.29 per cent in the big cities. The proportion of manufacturer of textiles shows an irregular pattern over the population size classes of towns, being 4.78 per cent in towns with population below 15 thousand, 17.21 per cent in towns with population 15-50 thousand and 10.24 in the big cities. The proportion of persons with occupation trade and commerce is somewhat steady over the population size classes of towns, lying within the range of 10.78 per cent for towns with population 15-50 thousand and 14.76 per cent for towns with population 50 thousand and above.

8.7. *Distribution of the unemployed by previous industry-occupation*: The last previous industry-occupation of the unemployed, seeking employment not for the first time, was taken in NSS 7th round; but previous employment was returned in too few cases and it is doubtful if the reporting was satisfactory. The state of unemployment by previous industry-occupation and skill is under further investigation from later NSS rounds. But even the 7th round inadequate data on previous employment made it clear that unemployment from loss of job was significant in manufacturing industries other than food products and textiles and in the public and professional services.

TABLE (8.4): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS : ALL-INDIA RURAL AND URBAN SAMPLE PERSONS  
(NSS 4th round)

occupation	rural zone							urban size class					
	north	east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000-50,000	above 50,000	cities	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(12)	(12)	(13)	
1. farmer	3.79	3.51	3.70	4.44	3.36	1.70	3.51	1.00	2.01	1.29	0.61	0.10	
2. cultivator	57.57	41.17	29.56	54.96	45.86	56.00	45.17	4.02	12.89	3.31	0.98	0.38	
3. share-cropper	2.55	7.83	4.81	6.40	6.30	10.84	6.15	1.37	3.40	2.14	0.23	—	
4. agricultural labour	15.85	20.58	31.33	15.70	21.90	8.25	20.61	5.04	14.81	7.10	1.58	0.29	
5. forestry, fishery, livestock workers	3.67	4.77	6.42	3.24	4.23	3.04	4.51	3.51	5.32	3.37	3.54	1.44	
6. all agricultural occupations	83.43	77.86	75.82	84.74	81.65	79.83	79.95	15.54	38.43	17.21	6.94	2.21	
7. manufacturer of food products	0.62	1.87	1.18	0.26	0.46	0.38	0.97	2.69	1.54	3.31	3.17	2.20	
8. manufacturer of textiles	1.59	1.97	2.50	1.25	1.25	1.29	1.75	10.42	4.78	17.21	8.75	10.24	
9. other manufacturers	1.74	2.37	1.33	1.86	1.15	2.21	1.77	4.02	3.32	4.35	3.96	4.50	
10. construction and sanitary services	1.57	0.39	1.19	1.03	1.08	2.88	1.15	5.39	5.79	3.55	5.68	7.18	
11. trade and commerce	2.48	3.09	2.31	1.66	1.25	3.47	2.39	12.63	11.88	10.78	14.76	12.06	
12. transport and communication services	0.72	0.93	2.53	0.48	0.32	1.62	1.12	8.13	4.86	6.98	9.36	11.48	
13. administrative and professional services	6.11	7.89	8.88	5.49	4.59	6.66	6.85	37.73	23.23	32.76	44.73	49.08	
14. others	1.74	3.63	4.26	3.26	8.25	1.66	4.05	3.45	6.17	3.85	2.65	1.05	
15. all non-agricultural occupations	16.57	22.14	24.18	15.26	18.35	20.17	20.05	84.46	61.57	82.79	93.06	97.79	
16. all occupations	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
17. (number of sample persons)	(2,998)	(4,708)	(3,307)	(3,162)	(3,262)	(2,249)	(19,686)	(6,122)	(1,296)	(1,633)	(2,148)	(1,045)	



## CHAPTER NINE

## INTENSITY OF EMPLOYMENT AND INCOME

9.1. It is well known that the real problem in India and other less developed countries, is one of under-employment; but very little was known about the dimension of under-employment on the national scale. Data on days or hours of work or intensity of employment were being collected in the past few NSS rounds. In NSS Preliminary Survey of Urban Unemployment conducted in towns with population 50,000-above in September 1953, the under-employed came out as 26.32 per cent and the severely under-employed with intensity of employment quarter or less as 9.83 per cent of the gainfully occupied persons in the agglomeration sector covered; the under-employed were found to be about 3.3 times as many as the unemployed.<sup>1</sup> From analysis of the NSS 7th round data, it is seen that as against an estimated number of 1.46 million<sup>2</sup> persons (0.39 per cent of the total population) in all-India reporting as unemployed during the reference period (September 1953–March 1954), 47.72 million persons (29.38 per cent of the gainfully employed, or 12.73 per cent of the total population) worked with less than full intensity, and 19.38 million persons (11.94 per cent of the gainfully employed, or 5.17 per cent of the total population) with intensity quarter or less. The distribution of the 47.72 million persons, who were not working full time, by causes showed that at least 22.77 million persons among them (about half) suffered from real under-employment since they supplied economic reasons for under-employment—lack of demand, lack of equipments and materials, slack and off seasons etc.

9.2. To provide anything near full employment to the really under-employed labour force, therefore, at least eleven million equivalent of additional whole-time jobs will be necessary, on the assumption that additional employment with half intensity will convert the average severely under-employed to full-employed: the dimension of this is important. As compared to this, only ten million jobs are planned to be created to meet the fresh accretion to the labour force and the unemployment back-log in course of the next quinquennium. Besides, the major bulk of the jobs created in the household industry sector under the strategy of tackling unemployment through labour-intensive projects will result more in mopping up of under-employment: the households and individuals having the skill and know-how could be expected to take advantage of these planned opportunities in the first instance. In the present situation, unemployment is likely to be much worse socially at the end of the Second Five Year Plan period, unless more intensified measures are taken.

9.3. In a predominantly industrial economy only numerical estimates of the unemployed would have been enough, but this is not so in an agricultural-rural

<sup>1</sup> NSS No. 8, *Preliminary Survey of Urban Unemployment*, para. 4.38.

<sup>2</sup> Growth of population calculated on the Census 1941–1951 rate of 1.32 per cent per annum.

economy like India's, where about 40 per cent of the total household consumption expenditure are outside the money economy. A more searching investigation of the frontiers of the unemployment and under-employment becomes imperative in this situation. Moreover, it is believed that a significant proportion of the population coming under a category of latent unemployed report themselves as outside the labour force altogether; they do not actively look for jobs for want of tradition, or the lazy supposition that no suitable job was available or just from inertia. In the course of pre-testing of later NSS round unemployment schedules in Bangalore near Calcutta, as against only about 1.5 per cent of the population reporting themselves under the active unemployed category of seeking work, as much as 3.5 per cent of the population came in the category of latent unemployed reporting themselves as engaged in domestic work though not essentially required.

9.4. To measure the extent of under-employment, the respective days of work in principal and subsidiary occupations, during the month (30 days preceding the date of survey) were recorded for the gainfully employed, in the NSS 4th to 6th round; and the intensity of employment during the reference month was taken in six broad divisions in the NSS 7th round. It is difficult to evolve a suitable quantitative indicator of under-employment. The problem of measurement of under-employment involves the construction of reasonable norms for periods of work, output and earnings for assessing the extent of employment on the basis of such norms. We do not intend here to enter into a detailed discussion about the complexities of measurement of under-employment; the days of work and the intensity of employment, undisputed indicators of under-employment, are only presented in this chapter, as they were reported.

9.5. In the NSS 4th to 6th round, a day on which any gainful work had been done was to be reported as a day of work irrespective of the hours spent on work. The days of work were recorded separately for the primary and each of the subsidiary occupations and the aggregate days a month for all the occupations of a person could, therefore, exceed 30. In the NSS 7th round, the criterion for measurement of intensity of employment was a little different. A person who thought that during the reference month he could not put in as much work as he was capable of, and wanted to, fell into the category of under-employed. On the other hand, a person who had worked to what he considered to be his full capacity according to normal practice was credited with full employment though his output and income might be meagre. Thus the evaluation of intensity of employment often depended on the subjective judgment of the informant. The six intensity of employment codes were (1) no work; (2) less than quarter, (3) quarter, (4) half, (5) three-quarter, and (6) full; besides rest, leave or vacation. For persons with less than full employment, the reason for under-employment was recorded under the following nine discrete codes: inability due to—(1) own illness, or (2) other domestic reasons; fall in production due to—(3) lack of materials and equipments, (4) fall in demand, (5) slack season, (6) policy, political and other reasons not known; (7) off season; (8) industrial disputes

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(2.1.9) other reasons. The income according to the period concerned from his work during the reference period was also noted in group notes.

9.6 *Days of work by activity status* The average days of work in the primary occupation during 30 days preceding the date of survey are shown by activity status in Table (9.1), from the NSS 5th and 6th round. The survey period of the NSS 5th round was December 1952–March 1953 and of 6th round May–August 1953. Combining the NSS 5th and 6th round estimates for all employed persons the average days of work in the rural sector was found to be about 18 and in the urban sector about 23. The average number of days worked was less for females

TABLE 9.1 : AVERAGE DAYS OF WORK IN THE PRIMARY OCCUPATIONS OF 1 OF 36 DAYS PRECEDING THE DATE OF SURVEY BY ACTIVITY STATUS AND SEX : ALL-INDIA RURAL AND URBAN SAMPLE PERSONS

(NSS 5th & 6th round)

activity status	sector	male			female			total			number of sample persons
		5th round	6th round	own bined	5th round	6th round	own bined	5th round	6th round	own bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. employer	rural	22.38	21.65	22.17	16.61	11.93	15.55	21.31	20.27	21.02	381
2. ..	urban	22.42	24.79	22.92	8.00	15.00	10.00	21.47	23.86	21.99	97
3. employee	rural	20.47	19.53	20.15	12.56	10.50	11.91	17.36	16.22	16.98	9,702
4. ..	urban	24.06	23.32	23.83	20.11	19.57	19.97	23.23	22.64	23.05	5,151
5. own account worker and unpaid household labour	rural	21.00	19.75	20.57	14.80	14.95	14.85	18.69	18.06	18.48	21,696
6. ..	urban	23.95	23.10	23.68	19.46	21.20	19.88	22.87	22.77	22.84	3,425
7. all activity status	rural	20.87	19.71	20.48	14.11	13.59	13.94	18.33	17.54	18.07	31,379
8. ..	urban	23.99	23.24	23.76	19.79	20.19	19.89	23.06	22.70	22.95	8,673

being 14 days in the rural and 20 days in the urban sector. Employers in the rural sector and employees in both the sectors had relatively less days of work in the NSS 6th round as compared to the 5th. From the very close agreement between the two independent samples within each of the rounds, a real difference in the intensities during the two reference periods seemed probable. Own account workers and unpaid household labour for the NSS 6th round were combined in Table (9.1) for comparison with the NSS 5th round. The NSS 6th round data [Table (9.6.6) in Appendix 0] showed that in both the sectors, own account workers have a little more days of work than the unpaid household labour.



9.7. *Days of work by occupation* : Table (9.2) shows, for the four agricultural occupation groups in the rural sector, the average days of work in a month in the primary and the subsidiary occupations, from the NSS 5th and the 6th round: in fact, the days of work in the primary occupation and total days of work in primary and subsidiary occupations combined have been shown. The days of work in the subsidiary occupations, available as a balancing item, have thus been averaged over all

TABLE (9.2) : AVERAGE DAYS OF WORK IN THE PRIMARY AND ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY BY SEX FOR SELECTED PRIMARY OCCUPATION GROUPS: ALL-INDIA RURAL SAMPLE PERSONS

(NSS 5th & 6th round)

primary occupation	sex	average days of work in the primary occupation			average days of work in all occupations			number of sample persons
		5th round	6th round	combined	5th round	6th round	combined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. farmer	male	21.73	20.54	21.33	28.96	26.38	28.09	752
2. „	female	17.08	12.01	15.33	21.42	14.86	19.16	270
3. „	total	20.51	18.26	19.74	26.98	23.29	25.72	1,022
4. cultivator	male	20.98	19.63	20.52	27.01	25.15	26.38	9,021
5. „	female	15.45	13.93	14.93	19.91	17.62	19.13	5,005
6. „	total	19.01	17.59	18.53	24.48	22.47	23.80	14,026
7. share-cropper	male	19.30	18.99	19.21	27.81	26.09	27.25	1,367
8. „	female	16.24	16.08	16.19	21.13	20.28	20.86	561
9. „	total	18.41	18.14	18.32	25.86	24.40	25.39	1,928
10. agricultural labour	male	16.86	17.99	17.29	21.02	21.76	21.27	3,318
11. „	female	10.74	8.18	9.96	13.13	10.20	12.23	2,944
12. „	total	13.81	13.90	13.84	17.08	16.94	17.01	6,262
13. all occupations <sup>1</sup>	male	20.87	19.71	20.48	26.05	24.48	25.52	19,820
14. „	female	14.11	13.59	13.94	17.54	16.60	17.24	11,559
15. „	total	18.33	17.54	18.07	22.86	21.69	22.47	31,379

<sup>1</sup> Includes occupations not listed.

gainfully employed persons having each of the primary occupations and not only over those among them who have subsidiary occupations. Excepting the male agricultural labour, the average days of work in the primary and the subsidiary occupations are seen to decrease from the NSS 5th to the 6th round. As between the four occupation groups, farmers have the highest average days of work (20 days) in the primary occupation, cultivators, share-croppers and agricultural labour coming

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next in order with 19, 18 and 14 average days of work respectively. For males, the average days in the primary occupation range from 21 for farmers to 17 for agricultural labour, for females, the days range from 16 for share croppers to 16 for agricultural labour. The ordering of occupations in regard to the total days of work follows a slightly different pattern in that share croppers have more total days of work than cultivators. Among males, farmers have the highest total days of work (28 days) and agricultural labour the lowest (21 days); among females, share croppers have the highest total days of work (21 days) and agricultural labour the lowest (12 days).

TABLE (9.3) . AVERAGE DAYS OF WORK IN THE PRIMARY AND ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY BY SEX FOR SELECTED OCCUPATION GROUPS: ALL-INDIA URBAN SAMPLE PERSONS  
(NSS 5th & 6th round)

primary occupation	sex	average days of work in the primary occupation			average days of work in all occupations			number of sample persons
		5th round	6th round	combined	5th round	6th round	combined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. cultivator	male	24.37	22.65	23.96	29.96	26.96	29.36	261
2. „	female	22.69	14.21	21.26	25.26	15.79	23.66	112
3. „	total	23.83	20.67	23.14	26.47	24.32	27.57	373
4. agricultural labour	male	17.57	19.74	18.47	20.06	22.17	20.96	241
5. „	female	10.86	10.80	10.85	11.83	12.60	12.06	330
6. „	total	13.56	16.06	14.38	15.18	16.24	16.18	571
7. manufacturer of textiles	male	23.10	21.58	22.74	24.49	22.83	24.10	555
8. „	female	21.87	23.45	22.12	23.27	23.46	22.46	375
9. „	total	22.67	22.06	22.54	23.71	22.99	23.56	930
10. administrative services	male	25.98	25.28	25.34	26.71	25.80	26.37	1,080
11. „	female	25.00	23.73	24.24	25.00	24.73	24.84	37
12. „	total	25.96	24.25	25.31	26.67	25.74	26.31	1,117
13. all occupations <sup>1</sup>	male	23.99	23.24	23.76	25.63	24.76	25.36	6,869
14. „	female	19.79	20.19	19.89	20.67	21.30	20.80	1,804
15. „	total	23.06	22.70	22.95	24.53	24.13	24.41	8,673

<sup>1</sup> Includes occupations not listed.

9.8. The average days of work in the primary and the subsidiary occupations, for four selected occupation groups in the urban sector are similarly shown in Table (9.3), from the NSS 5th and the 6th round. Except for male agricultural labour

and female manufacturers of textiles, the days of work in the primary occupations listed in the NSS 6th round are generally at a lower level than in the NSS 5th round. As between the occupation groups covered, those in administrative services have the maximum days of work (25 days) in the primary occupation and agricultural labour the minimum (14 days); cultivators and manufacturers of textiles have on an average 23 days of work. The sex differential in the days of work is least marked among the manufacturers of textiles. As regards the total days of work in all the occupations, the ordering of the occupations is slightly changed in the urban sector, cultivators with about 4 days on subsidiary occupations showing the maximum total days of work.

9.9. The total days of work in the primary and the subsidiary occupations during the 30 days preceding the date of survey, for eight selected occupations from the NSS 6th round are shown separately for males and females for the six rural population zones in Table (9.4): and corresponding figures for five urban size classes of towns are shown in Table (9.5). As between the rural population zones, the highest number of total days of work is observed in north zone for both males and females. For males, the average days vary from 27 in north zone to 23 in east zone; for females, the spread is much greater, from 23 in north zone to 13 in central zone. Coming to the different occupations, for farmers, the highest days of work is observed in north-west zone (33 days)<sup>1</sup> and the lowest in south zone (20 days); north zone returns the highest days of work for cultivators (27 days) and central zone the lowest (19 days). For share-croppers, north-west zone has the maximum days of work (30 days) and north zone the lowest (19 days). For agricultural labour, north zone returns the highest days of work (20 days) and south zone the lowest (14 days).<sup>2</sup> Considerable variations thus obtain between the rural population zones in total days of work for the selected occupations. The variation of only one day in average days of work for males over the size classes of towns is remarkable. Females have the highest days of work (25 days) in the big cities, but the lowest (17 days) in towns with population below 15 thousand. The variation in the average days of work among urban size classes of towns is smaller than that among rural population zones. The differences in days of work among the occupation groups brought out in the tables are interesting, but much significance may not be placed on them at this stage.

9.10. *Distribution by days of work*: The percentage distribution of the gainfully employed by days of work in the primary occupation in the rural and urban

<sup>1</sup> The total days of work as reckoned might exceed 30 (see para 9.5).

<sup>2</sup> The ordering of the rural zones in regard to the days of work of agricultural labour according to the NSS data generally follows the pattern obtained in the Agricultural Labour Enquiry, 1950-51 (*Agricultural Labour Enquiry, Vol. I—All-India*).



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TABLE 9.4 : AVERAGE DAYS OF WORK IN ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY FOR SELECTED PRIMARY OCCUPATION GROUPS BY SEX IN RURAL POPULATION ZONES—ALL INDIA RURAL SAMPLE PERSONS

(NSS 6th round)

primary occupation	sex	rural zone						all India rural	number of sample persons
		north	east	south	west	central	north west		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. farmer	male	29.78	24.87	23.33	28.43	25.40	33.00	26.38	255
2. „	female	19.12	17.86	11.85	13.88	10.00	31.40	14.86	93
3. „	total	26.90	24.22	20.02	21.47	21.69	32.53	23.29	348
4. cultivator	male	28.47	22.62	26.85	25.18	22.67	25.48	25.15	3,001
5. „	female	24.55	11.72	19.93	17.93	14.03	19.43	17.62	1,712
6. „	total	27.27	19.42	24.74	21.91	19.03	23.24	23.47	4,773
7. share-cropper	male	21.16	22.61	28.84	27.03	30.35	30.37	26.09	437
8. „	female	12.80	14.44	24.72	19.76	10.63	28.06	20.28	181
9. „	total	18.90	21.45	27.42	23.91	24.50	29.51	24.40	618
10. agricultural labour	male	24.49	23.20	18.24	21.08	22.53	21.99	21.76	1,262
11. „	female	7.95	10.87	10.34	12.03	9.07	12.26	10.20	901
12. „	total	19.85	18.88	14.39	16.90	16.01	19.23	16.94	2,163
13. forestry, fishery, livestock workers	male	27.35	27.78	27.40	30.05	26.99	28.98	27.86	518
14. „	female	30.44	20.43	27.35	28.30	18.22	26.93	24.56	225
15. „	total	28.64	25.92	27.40	29.52	24.32	28.30	26.87	743
16. manufacturer of food products	male	23.61	21.02	31.18	29.00	36.50	19.34	24.99	70
17. „	female	25.41	20.64	18.88	12.00	16.75	30.00	21.23	89
18. „	total	24.69	20.76	26.92	22.63	26.62	20.85	22.88	159
19. operatives and artisans	male	25.26	23.48	19.85	24.89	21.12	20.20	22.22	344
20. „	female	18.50	24.33	18.07	27.06	17.54	15.25	20.02	129
21. „	total	23.97	23.74	19.11	25.22	20.26	19.80	21.62	473
22. unskilled labour	male	27.89	23.23	22.57	17.35	25.72	25.15	22.85	157
23. „	female	26.00	25.05	21.29	22.50	18.87	24.40	23.01	99
24. „	total	27.34	23.85	22.14	19.46	20.95	24.98	22.92	256
25. all occupations <sup>2</sup>	male	27.05	23.24	23.37	24.96	23.80	25.76	24.48	6,744
26. „	female	22.53	13.75	16.07	17.44	13.14	20.55	16.60	3,706
27. „	total	25.61	20.38	20.65	21.79	19.55	24.04	21.69	10,450

<sup>1</sup> The days of work were recorded separately for the primary and each of the subsidiary occupations and the aggregate days of work in a month could, therefore, exceed 30.

<sup>2</sup> Includes occupations not listed.

TABLE (9.5) : AVERAGE DAYS<sup>1</sup> OF WORK IN ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY FOR SELECTED PRIMARY OCCUPATION GROUPS BY SEX IN THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA URBAN SAMPLE PERSONS

(NSS 6th round)

primary occupation	sex <sup>2</sup>	urban size class					all-India urban	number of sample persons
		below 15,000	15,000- <50,000	50,000- <100,000	100,000 -above	cities		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. administrative, executive and technical work	male	27.16	28.68	22.54	25.53	24.95	25.54	371
2. peon, cleaner, scavenger	male	28.45	32.97	22.10	25.92	27.76	27.21	184
3. „	female	15.00	24.00	25.33	28.83	29.00	27.75	48
4. „	total	27.33	32.37	22.82	27.21	27.87	27.31	232
5. operatives and artisans	male	24.71	23.89	24.44	23.14	23.18	23.74	412
6. „	female	24.83	18.36	22.25	15.25	17.33	20.65	34
7. „	total	24.73	23.12	24.31	22.82	23.03	23.49	446
8. agricultural labour	male	22.49	18.50	19.22	35.75	—	22.17	100
9. „	female	13.21	9.00	25.00	15.00	—	12.60	70
10. „	total	18.85	13.02	20.67	31.60	—	18.24	170
11. manufacturer of textiles	male	60.00	20.48	22.38	22.55	25.48	22.83	132
12. „	female	30.00	21.39	25.00	25.45	—	23.46	44
13. „	total	40.00	20.86	23.00	23.06	25.48	22.99	176
14. retailer	male	25.44	27.40	26.93	27.56	29.21	27.50	167
15. wholesaler and financial operator	male	6.00	27.21	27.71	28.69	25.18	25.61	81
16. unskilled labour	male	17.60	21.93	22.82	23.69	21.64	22.23	184
17. „	female	18.36	19.37	22.00	21.89	25.00	20.63	75
18. „	total	18.00	21.03	22.65	23.25	22.21	21.87	259
19. all occupations <sup>3</sup>	male	25.31	24.60	24.18	24.51	25.06	24.76	2,121
20. „	female	17.34	18.97	24.39	24.82	25.21	21.20	459
21. „	total	23.24	23.14	24.22	24.57	25.07	24.13	2,580

<sup>1</sup> See footnote 1 to Table (9.4).<sup>2</sup> Female entries have not been shown for occupations with very small sample sizes.<sup>3</sup> Includes occupations not listed.

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sectors is shown in Table (9.6) for the NSS 5th and the 6th round combined, in broad days of work groups. Similar distributions of the gainfully employed for the rounds separately are given in Appendix 9. From Table (9.6) it is seen that of all gainfully employed persons in the rural sector, 26.71 per cent have less than ten days' work a month; the corresponding proportion in the urban sector is 9.65 per cent. The proportions with less than ten days' work a month are 40.96 per cent in the rural and 21.06 per cent in the urban sectors for females, as against 18.40 and 6.65 per cent respectively for males. The cumulative percentage of gainfully employed population, by sex and sector working less than a specific number of days a month in the primary occupation is shown graphically in Diagram (9.1).

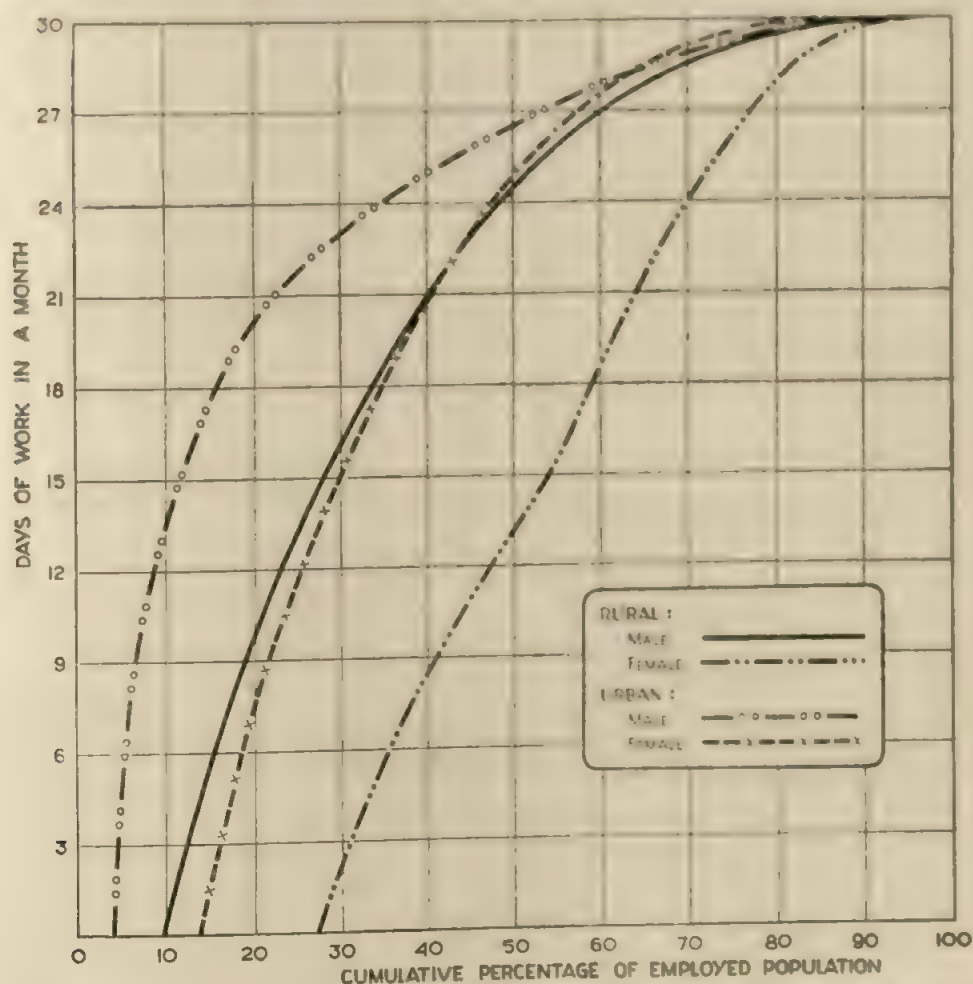


Diagram (9.1): The cumulative percentage of gainfully employed population working less than a specific number of days a month in the primary occupation by sex and sector (NSS 5th and 6th round combined).

Source : Table (9.18.2).



TABLE 9 (6) PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION BY ACTIVITY STATUS  
AND SEX : ALL-INDIA RURAL AND URBAN SAMPLE PERSONS

(NSS 5th &amp; 6th round combined)

activity status	sector	days of work				average days of work	number of sample persons
		0-9	10-19	20- above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
.1 : male							
1. employer	rural	12.69	15.87	71.44	100.00	22.17	315
2. "	urban	12.23	5.55	82.22	100.00	22.92	90
3. employee	rural	18.09	19.83	62.08	100.00	20.15	5,722
4. "	urban	6.08	10.04	83.88	100.00	23.83	4,111
5. own account worker and unpaid household labour	rural	18.66	16.42	64.92	100.00	20.57	13,783
6. "	urban	7.35	11.36	81.29	100.00	23.68	2,608
7. all employed	rural	18.40	17.40	64.20	100.00	20.48	19,820
8. "	urban	6.65	10.49	82.86	100.00	23.76	6,869
.2 : female							
1. employer	rural	39.39	13.63	46.98	100.00	15.55	66
2. "	urban	57.15	14.28	28.57	100.00	10.00	7
3. employee	rural	44.77	26.18	29.05	100.00	11.91	3,580
4. "	urban	19.32	17.60	63.08	100.00	19.97	1,040
5. own account worker and unpaid household labour	rural	39.26	16.89	43.85	100.00	14.85	7,913
6. "	urban	23.16	12.15	64.69	100.00	19.88	757
7. all employed	rural	40.95	19.76	39.29	100.00	13.94	11,559
8. "	urban	21.06	15.30	63.64	100.00	19.89	1,804
.3 : total							
1. employer	rural	17.32	15.48	67.20	100.00	21.02	381
2. "	urban	15.46	6.18	78.36	100.00	21.99	97
3. employee	rural	28.36	22.27	49.37	100.00	16.98	9,302
4. "	urban	8.76	11.57	79.67	100.00	23.05	5,151
5. own account worker and unpaid household labour	rural	26.17	16.59	57.24	100.00	18.48	21,696
6. "	urban	10.84	11.54	77.62	100.00	22.84	3,425
7. all employed	rural	26.71	18.26	55.03	100.00	18.07	31,379
8. "	urban	9.65	11.50	78.85	100.00	22.95	8,673

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

9.11. The percentage distribution by days of work in the primary occupation of persons employed in four selected occupation groups in the rural sector is shown in Table 9.7. 36.81 per cent of agricultural labourers have less than 10 days work a month; for the other occupation groups, this proportion ranges from 23.81 per cent for cultivators to 22.21 per cent for farmers. The sex differential in this proportion is also very marked, specially in the case of farmers and agricultural labourers, in the selected occupations, excepting sharecroppers, the proportion

TABLE 9.7. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION BY SEX FOR SELECTED OCCUPATION GROUPS: ALL-INDIA RURAL SAMPLE PERSONS

(NSS 5th & 6th round combined)

primary occupation	sex	days of work			total	average days of work	number of sample persons
		0-9	10-19	20 above			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. farmer	male	16.36	15.86	68.06	100.00	21.23	752
2. ..	female	38.62	15.55	45.93	100.00	15.23	370
3. ..	total	22.21	15.66	62.23	100.00	19.74	1,022
4. cultivator	male	18.97	15.87	65.16	100.00	20.52	9,021
5. ..	female	38.14	17.88	43.96	100.00	14.83	5,005
6. ..	total	25.81	16.59	57.61	100.00	18.63	14,026
7. share-cropper	male	19.68	22.90	57.43	100.00	19.21	1,367
8. ..	female	34.40	18.72	46.88	100.00	16.19	561
9. ..	total	23.96	21.65	54.36	100.00	18.33	1,928
10. agricultural labour	male	24.26	26.16	49.58	100.00	17.29	3,316
11. ..	female	50.95	27.89	21.16	100.00	9.96	2,944
12. ..	total	36.81	26.97	36.22	100.00	13.64	6,262
13. all occupations <sup>1</sup>	male	18.40	17.40	64.20	100.00	20.48	19,820
14. ..	female	40.95	19.76	39.29	100.00	13.94	11,559
15. ..	total	26.71	18.26	55.03	100.00	18.07	31,379

<sup>1</sup> Includes occupations not listed.

with less than ten days' work a month for females is more than double the proportion for males. Equal availability for work cannot, however, be assumed as between the sexes, and higher proportion of females with less than ten days' work a month may be partially due to their preoccupation with domestic work and lesser availability for labour force participation. But as between males in the four agricultural occupations examined, the proportions should reflect respective levels of severe under-employment, even if it is assumed that they are having some more days of work in the subsidiary occupations.

9.12. Table (9.8) shows for the urban sector the distribution of all gainfully employed persons by days of work in the primary occupation, for four selected occupation groups, from the NSS 5th and the 6th round combined. Only 3.27 per cent of the persons employed in administrative services reported less than ten days' work a month, which was the minimum proportion for the occupations examined. As in the rural sector, the maximum proportion was reported by agricultural labour,

TABLE (9.8) : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION FOR SELECTED OCCUPATION GROUPS: ALL-INDIA URBAN SAMPLE PERSONS

(NSS 5th & 6th round combined)

primary occupation	sex	days of work			total	average days of work	number of sample persons
		0-9	10-19	20-above			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. cultivator	male	10.73	10.34	78.93	100.00	23.96	261
2. „	female	18.75	11.61	69.64	100.00	21.25	112
3. „	total	13.14	10.72	76.14	100.00	23.14	373
4. agricultural labour	male	17.01	26.97	56.02	100.00	18.47	241
5. „	female	44.65	30.71	24.64	100.00	10.85	280
6. „	total	31.86	28.98	39.16	100.00	14.38	521
7. manufacturer of textiles	male	6.49	12.97	80.54	100.00	22.74	555
8. „	female	11.64	12.73	75.63	100.00	22.12	275
9. „	total	8.19	12.89	78.92	100.00	22.54	830
10. administrative services	male	3.35	3.92	92.73	100.00	25.34	1,046
11. „	female	—	8.33	91.67	100.00	24.24	24
12. „	total	3.27	4.02	92.71	100.00	25.31	1,070
13. all occupations <sup>1</sup>	male	6.65	10.49	82.86	100.00	23.76	6,869
14. „	female	21.06	15.30	63.64	100.00	19.89	1,804
15. „	total	9.65	11.50	78.85	100.00	22.95	8,673

<sup>1</sup> Includes occupations not listed.

31.86 per cent of whom had less than ten days of work a month : the position of agricultural labour in regard to under-employment appears to be no better in the urban sector. For other agricultural occupations, the position was more favourable in the urban sector. In the urban sector the difference between the sexes with regard to days of work was less.



## SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

9.13. *Days of work in the secondary occupation by days of work in the primary occupation*—The distribution of days of work in the secondary occupation by days of work in the primary occupation is shown in Table 9.9, from the NSS 5th and the 6th round combined, for the rural and urban sectors separately. As has been mentioned earlier, the average days of work in the secondary occupation relate to all employed persons and not only to persons having a secondary occupation. In the rural sector, 72.09 per cent of males and 82.50 per cent of females have no days of work in the secondary occupation; the corresponding percentages in the urban sector are 91.60 for males and 94.90 for females (Tables in Appendix 9). The average days of work in the secondary occupation in the rural sector are about four for all employed persons, about four for males and three for females; in the urban sector, the average days of work in the secondary occupation are a little more than one for males and a little less for females. For each days of work group in the primary occupation, the days of work in the secondary occupation are fewer in the urban sector as compared to the rural, as also for females as compared to males. The bigger days of work in the primary occupation and the comparatively fewer days of work in the secondary occupation in the urban sector show the greater intensity of work in the primary and the limited scope left for engaging in subsidiary occupation in the urban sector. The proportion of gainfully employed persons having any secondary occupation is 35 per cent in the rural sector and 13 per cent in the urban sector, as will be seen from the Tables (9.19.5)3 and (9.19.5)6 in Appendix 9.

9.14. *Intensity of employment by occupation*—With the data on days of work collected in the NSS 4th to 6th round, further analysis as to availability could not be done, as the reasons for under-employment were not collected in these rounds. This lacuna was filled up in the NSS 7th round with the intensity of employment approach, when the reasons for under-employment were also taken. The percentage distributions of sample persons in some selected occupations by intensity of employment and sex are shown in Tables (9.10) and (9.11) for the rural and urban sectors respectively, from the NSS 7th round. Of the gainfully employed persons in the rural sector, 4.40 per cent reported nil intensity of work, 4.07 per cent less than a quarter and 4.33 per cent quarter intensity; 5.79 per cent of the total rural population, 5.40 per cent of total males and 6.34 per cent of total females, have intensity of employment quarter or less; they constitute 12.80 per cent of the rural employed, 9.19 per cent among males and 20.16 among females. For the urban sector, the proportion with intensity of employment quarter or less is 2.19 per cent of the total population, 2.83 per cent of total males and 1.59 per cent of total females; they constitute 6.44 per cent of the total employed, 5.46 per cent among males and 10.94 per cent among females.

9.15. In the rural sector, 54.37 per cent of male agricultural labour and 33.39 per cent of female agricultural labour had full intensity of employment; for others with agricultural occupations, this percentage ranges between 71.16 to 79.71. The maximum proportion of persons with intensity of employment quarter or less was found in the occupation groups manufacturer of food products and agricultural

about and the variations among cultivators, sharecroppers and farmers. The persons with intensity of employment quarter or less are generally higher among females in all the occupation groups excepting the operatives and artisans, and the manufacturer of textiles.

TABLE 200. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE SECONDARY OCCUPATION BY SEX FOR DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION: ALL-INDIA RURAL AND URBAN SAMPLE PERSONS

(1988 5th & 6th round combined)

days of work in primary occupation		days of work in secondary occupation				average days of work <sup>1</sup>	number of sample persons
		0-9	10-19	20-above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1: male							
1. 0-9	rural	74.50	8.61	16.89	100.00	6.28	3,648
2. "	urban	85.99	4.38	9.63	100.00	3.40	457
3. 10-19	rural	76.13	17.37	6.50	100.00	4.70	3,448
4. "	urban	90.02	6.24	3.74	100.00	2.06	721
5. 20-above	rural	85.93	4.36	9.71	100.00	3.51	12,724
6. "	urban	95.34	0.72	3.94	100.00	1.26	5,691
7. total	rural	82.12	7.41	10.47	100.00	4.25	19,820
8. "	urban	94.17	1.54	4.29	100.00	1.49	6,869
2: female							
1. 0-9	rural	90.01	3.76	6.23	100.00	2.53	4,735
2. "	urban	96.05	1.58	2.37	100.00	0.89	380
3. 10-19	rural	88.48	8.76	2.76	100.00	2.24	2,283
4. "	urban	96.38	2.17	1.45	100.00	0.78	276
5. 20-above	rural	88.48	2.16	9.36	100.00	3.03	4,541
6. "	urban	96.86	0.44	2.70	100.00	0.86	1,148
7. total	rural	89.11	4.12	6.77	100.00	2.70	11,559
8. "	urban	96.62	0.94	2.44	100.00	0.86	1,804
3: total							
1. 0-9	rural	83.26	5.87	10.87	100.00	4.16	8,383
2. "	urban	90.56	3.11	6.33	100.00	2.26	837
3. 10-19	rural	81.05	13.94	5.01	100.00	3.72	5,731
4. "	urban	91.77	5.12	3.11	100.00	1.70	997
5. 20-above	rural	86.60	3.78	9.62	1000.00	3.43	17,265
6. "	urban	95.60	0.67	3.73	100.00	1.20	6,839
7. total	rural	84.69	6.20	9.11	100.00	3.68	31,379
8. "	urban	94.67	1.42	3.91	100.00	1.36	8,673

<sup>1</sup> In secondary occupation.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9.10. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN INTENSITY OF EMPLOYMENT GROUPS FOR SELECTED OCCUPATION  
GROUPS BY SEX: ALL-INDIA RURAL SAMPLE PERSONS  
(N88 7th round)

occupation	intensity of employment							all persons	rounded figures of sample persons
	no work	less than quar- ter	quarter	half	three quarters	full	more than full		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<b>-1: male</b>									
1. operatives and artisans	3.70	5.46	7.21	13.06	9.75	60.82	—	100.00	518
2. farmer	1.69	3.59	2.54	6.55	4.44	79.71	1.48	100.00	475
3. cultivator	2.40	2.52	2.42	6.53	6.37	79.21	0.35	100.00	5,000
4. share-cropper	2.72	2.87	2.87	12.08	1.89	73.42	0.15	100.00	656
5. agricultural labour	4.06	5.16	6.12	17.34	12.32	54.37	0.43	100.00	2,099
6. manufacturer of food products	7.60	3.26	10.87	10.87	11.96	55.44	—	100.00	93
7. manufacturer of textiles	5.00	6.25	7.50	10.00	11.25	60.00	—	100.00	83
8. unskilled labour	3.90	1.73	5.63	13.85	9.52	64.94	0.43	100.00	234
9. all occupations <sup>1</sup>	2.70	3.01	3.48	9.04	7.16	74.10	0.51	100.00	12,012
<b>-2: female</b>									
1. operatives and artisans	2.25	8.99	6.18	16.85	13.48	52.25	—	100.00	182
2. farmer	6.58	5.92	2.63	9.21	1.32	73.68	0.66	100.00	154
3. cultivator	7.52	3.91	3.64	7.90	4.67	71.16	1.20	100.00	2,958
4. share-cropper	5.51	3.81	4.24	8.47	2.97	75.00	—	100.00	232
5. agricultural labour	10.98	10.30	10.07	24.28	10.47	33.39	0.51	100.00	1,779
6. manufacturer of food products	4.39	17.54	12.28	16.67	10.53	38.59	—	100.00	119
7. manufacturer of textiles	6.72	2.52	5.88	14.29	11.76	58.83	—	100.00	121
8. unskilled labour	4.29	5.00	7.14	12.86	2.14	68.57	—	100.00	144
9. all occupations <sup>1</sup>	7.85	6.24	6.07	14.06	6.92	58.14	0.72	100.00	6,278
<b>-3: total</b>									
1. operatives and artisans	3.33	6.37	6.95	14.03	10.71	58.61	—	100.00	700
2. farmer	2.88	4.16	2.56	7.20	3.08	78.24	1.28	100.00	629
3. cultivator	4.10	2.98	2.83	6.98	5.81	76.54	0.76	100.00	8,867
4. share-cropper	3.45	3.12	3.23	11.14	5.12	73.83	0.11	100.00	888
5. agricultural labour	7.23	7.51	7.93	20.52	11.58	44.76	0.47	100.00	3,878
6. manufacturer of food products	5.83	11.16	11.65	14.08	11.16	46.12	—	100.00	212
7. manufacturer of textiles	6.03	4.02	6.53	12.56	11.56	59.30	—	100.00	204
8. unskilled labour	4.04	2.96	6.20	13.48	6.74	66.31	0.27	100.00	378
9. all occupations <sup>1</sup>	4.40	4.07	4.33	10.69	7.08	68.85	0.58	100.00	18,290

<sup>1</sup> Includes occupations not listed.



9.16 In the urban sector agricultural labour shows the maximum proportion with intensity of employment quarter or less and administrative services the minimum. Table (9.11) read with Table (9.10) will indicate the dimensional difference in the intensity of employment in the two sectors.

TABLE 9.11. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN INTENSITY OF EMPLOYMENT GROUPS FOR SELECTED OCCUPATION GROUPS BY SEX: ALL-INDIA URBAN SAMPLE PERSONS (NSS 7th round)

occupation	sex <sup>1</sup>	intensity of employment							all intensities	number of sample persons
		no work	less than quarter	quarter	half	three quarters	full	leave, rest, vacation		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. subordinate administrative work	male	1.00	—	0.50	2.50	3.50	91.50	1.00	100.00	201
2. peon	male	0.55	0.55	—	2.18	2.73	93.99	—	100.00	183
3. cultivator	male	1.53	3.82	—	5.34	7.63	80.92	0.76	100.00	134
4. agricultural labour	male	0.78	3.88	4.65	18.60	8.52	62.79	0.78	100.00	127
5. „	female	5.49	10.99	12.09	27.47	4.40	39.56	—	100.00	93
6. „	total	2.73	6.82	7.73	22.27	6.82	53.18	0.45	100.00	220
7. retailer	male	1.71	1.71	2.86	9.14	5.72	78.86	—	100.00	177
8. unskilled labour	male	0.69	0.69	4.17	5.56	11.81	76.39	0.69	100.00	137
9. „	female	—	5.06	2.53	11.39	1.27	79.75	—	100.00	77
10. „	total	0.45	2.24	3.59	7.62	8.07	77.58	0.45	100.00	214
11. all occupations <sup>2</sup>	male	1.49	1.77	2.20	7.67	6.90	79.28	0.69	100.00	2,111
12. „	female	2.41	3.72	4.81	13.78	3.94	71.26	0.08	100.00	490
13. „	total	1.65	2.12	2.67	8.77	6.37	78.03	0.39	100.00	2,601

<sup>1</sup> Female entries have not been shown for occupations with very small sample sizes.

<sup>2</sup> Includes occupations not listed.

9.17. *Reasons for under-employment by occupation*: The percentage distribution of employed persons other than those with full intensity of employment or who are on leave, vacation or resting by reasons of under-employment and sex, for some selected occupation groups in both the rural and urban sectors, is shown in Table (9.12) from the NSS 7th round. The category 'other reasons', that is, those not covered by the other seven specific reason codes provided, unfortunately claimed a substantial proportion (about 30 per cent) for all occupation groups in both the sectors; but analysis by reasons still supplies some useful information. The reason 'industrial disputes' was not reported at all in the sample, and the category has therefore been omitted from the Tables. The reason 'off season' is returned by 9-17 per cent of under-employed farmers, cultivators, share-croppers and agricultural labour; for other occupation groups the proportion is much smaller. Leaving out of account the unskilled labour in the urban sector, of the other under-

TABLE (9.12) : PERCENTAGE DISTRIBUTION OF UNDER-EMPLOYED PERSONS IN SELF-HELPED OCCUPATION (1953-54) BY SEX AND REASONS FOR UNDER-EMPLOYMENT: ALL-INDIA RURAL AND URBAN SAMPLE PERSON

(NSS 7th round)											
		reasons for under-employment <sup>2</sup>									
occupation	sector <sup>1</sup>	1	2	3	4	5	6	7	8	total	fraction of sample persons
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
					<b>1: male</b>						
1. farmer	rural	9.76	18.29	3.66	—	21.95	—	17.07	29.27	100.00	89
2. cultivator	"	11.92	9.64	4.56	2.46	24.71	0.18	16.47	30.06	100.00	1,188
3. share-cropper	"	13.58	8.64	4.94	1.85	19.76	—	12.35	38.88	100.00	172
4. agricultural labour	"	9.17	7.21	0.55	27.51	24.67	0.55	9.06	21.28	100.00	946
5. " "	urban	10.64	—	—	38.29	27.66	—	12.77	10.64	100.00	47
6. forestry and fishery workers	rural	7.14	35.71	—	14.29	14.29	—	4.76	23.81	100.00	42
7. retailers	urban	2.70	8.11	—	27.03	24.32	—	—	37.84	100.00	37
8. unskilled labour	"	3.03	—	—	39.40	9.09	3.03	6.06	39.39	100.00	33
9. all occupations <sup>3</sup>	rural	10.53	8.82	3.06	14.59	21.42	0.39	10.40	30.79	100.00	1,100
10. " "	urban	8.87	4.08	1.92	33.57	15.59	2.88	3.83	29.56	100.00	417
					<b>2: female</b>						
11. farmer	rural	2.94	14.70	—	—	52.95	—	11.77	14.70	100.00	70
12. cultivator	"	7.81	29.17	2.21	1.56	19.66	—	17.19	32.40	100.00	806
13. share-cropper	"	5.55	24.07	—	—	27.78	—	12.96	29.64	100.00	108
14. agricultural labour	"	6.21	15.89	0.97	22.98	24.93	—	9.41	19.61	100.00	1,368
15. " "	urban	7.27	20.00	—	12.73	25.45	—	14.55	20.00	100.00	68
16. forestry and fishery workers	rural	8.51	17.02	—	14.00	29.78	—	2.13	27.06	100.00	49
17. all occupations <sup>3</sup>	rural	7.06	20.04	2.07	13.87	21.27	0.12	10.59	24.98	100.00	40
18. " "	urban	8.33	16.67	5.39	18.18	16.67	1.52	4.55	28.78	100.00	17
					<b>3: total</b>						
19. farmer	rural	7.76	17.25	2.38	0.86	31.92	—	15.52	2.61	100.00	108
20. cultivator	"	10.26	17.50	3.61	2.10	22.68	0.10	16.71	26.08	100.00	1,000
21. share-cropper	"	11.57	12.50	3.70	1.79	21.76	—	12.26	36.8	100.00	264
22. agricultural labour	"	7.53	11.99	0.79	25.02	24.81	0.25	9.25	29.66	100.00	1,114
23. " "	urban	8.82	10.78	—	24.51	26.47	—	13.73	11.69	100.00	202
24. forestry and fishery workers	rural	7.86	25.84	—	14.61	22.48	—	7.37	2.84	100.00	31
25. retailers	urban	2.38	11.60	—	26.19	21.43	—	—	38.16	100.00	47
26. unskilled labour	"	6.12	4.08	—	40.82	8.16	2.04	4.08	34.76	100.00	49
27. all occupations <sup>3</sup>	rural	8.99	13.79	2.62	14.27	21.76	0.27	10.48	28.23	100.00	1,000
28. " "	urban	8.74	7.10	2.73	29.87	15.83	2.59	4.61	29.15	100.00	60

1 The urban or rural entries have not been shown for occupations with very small sample sizes.

2 Inability due to—(1) own illness, (2) domestic reasons, fall in production due to—(3) lack of materials and equipment, (4) fall in demand, (5) season, (6) political and other reasons, (7) off season, (8) other reasons.

3 Includes occupations not listed.

employed, more than 21 per cent reported the reason 'slack season'. The proportion of under-employed farmers, cultivators and share-croppers who ascribed their under employment to 'fall in demand', was 2 per cent or less; for other occupation groups the proportion ranged between 15 and 41 per cent. For the female agricultural labour 'domestic reasons' do not seem to play as important a part as they do for female cultivators and share-croppers. The reason 'own illness' is returned by about 11 per cent under-employed among cultivators and share-croppers, and about 7 per cent among occupation groups studied except the retailers who reported a much lower proportion.

9.18. *Intensity of employment by occupation and income accrual*: The percentage distribution of sample persons in five selected occupation groups by sex, intensity of employment and type of income accrual is shown in Table (9.13) from the NSS 7th round. In this Table only two broad intensity classifications, full and less than full, are shown under two types of income accrual, concurrent and delayed. As the names indicate, incomes accruing concurrently with work come under the first type, and incomes accruing after harvest or when the product is fit for sale or consumption come under the delayed type. The preponderance of agricultural labour having the concurrent type of income accrual (88 per cent) and of cultivators having the delayed type (97 per cent) is noticeable. It will be observed that for the delayed income accrual type, the proportion with full intensity of work is nearly of the same high level of 70-80 per cent for all the occupation groups, except for the livestock workers who show a still higher peak of about 95 per cent. On the other hand, for the concurrent income accrual type, the proportions with full intensity of work vary between 40 to 90 per cent, agricultural labour and share-croppers having the minimum proportion and the livestock workers the maximum. For all types of income accrual and all occupations taken together the proportion with full intensity of work was of the level of 70 per cent; as against this, agricultural labour reported only 45.22 per cent under full intensity.

9.19. Table (9.13) also shows, at its floor, the distribution of sample persons for all occupations combined, by sex, intensity of employment class and type of income accrual, for the urban sector. It will be seen that in the urban sector, unlike the rural, there is little difference between the two types of income accruals in regard to the intensity of employment.

9.20. *Average income by industry and occupation*: The average monthly incomes in a few selected occupation groups are shown from the NSS 7th round data, for the rural sector in Table (9.14) and for the urban sector in Table (9.15). The degree of representativeness of the income data is, however, open to question. Subject to this and other limitations, the average incomes have been computed on the basis of persons returning any income, in the group codes provided. In the rural sector, of the occupations listed, farmers are seen to have the highest monthly income (Rs. 227) and agricultural labour the lowest (Rs. 16). Cultivators and share-croppers had average incomes of Rs. 79 and Rs. 50 respectively. The average



TABLE (9.13) : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN INTENSITY OF EMPLOYMENT GROUPS  
BY TYPE OF INCOME ACCRUAL FOR SELECTED OCCUPATION GROUPS BY SEX : ALL-INDIA RURAL AND URBAN  
SAMPLE PERSONS

(NSS 7th round)

occupation	sex	income accruing concurrently with work				income accruing after harvest or when the product is fit for sale or consumption				total			
		less than full	full	total	number of sample persons	less than full	full	total	number of sample persons	less than full	full	total	number of sample persons
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1: rural													
1. farmer	male	37.50	62.50	100.00	24	17.94	82.06	100.00	446	18.82	81.18	100.00	475
2. "	female	14.29	85.71	100.00	7	26.06	73.94	100.00	142	25.66	74.34	100.00	154
3. "	total	32.26	67.74	100.00	31	19.90	80.10	100.00	588	20.48	79.52	100.00	629
4. cultivator	male	44.87	55.13	100.00	156	19.54	80.46	100.00	5,696	20.24	79.76	100.00	5,909
5. "	female	61.04	38.96	100.00	77	26.66	73.34	100.00	2,821	27.65	72.35	100.00	2,958
6. "	total	50.21	49.79	100.00	233	21.90	78.10	100.00	8,517	22.70	77.30	100.00	8,867
7. share-cropper	male	62.50	37.50	100.00	32	24.48	75.52	100.00	629	26.44	73.56	100.00	656
8. "	female	40.00	60.00	100.00	5	24.35	75.65	100.00	230	25.00	75.00	100.00	232
9. "	total	59.46	40.54	100.00	37	24.45	75.55	100.00	859	26.06	73.94	100.00	888
10. agricultural labour	male	48.40	51.60	100.00	1,808	24.28	75.72	100.00	276	45.20	54.80	100.00	2,099
11. "	female	69.93	30.07	100.00	1,563	32.80	67.20	100.00	186	66.14	33.86	100.00	1,779
12. "	total	58.38	41.62	100.00	3,371	27.71	72.29	100.00	462	54.78	45.22	100.00	3,878
13. livestock worker	male	9.90	90.10	100.00	303	5.16	94.84	100.00	426	7.24	92.76	100.00	744
14. "	female	12.90	87.10	100.00	62	4.55	95.45	100.00	110	7.56	92.44	100.00	172
15. "	total	10.41	89.59	100.00	365	5.04	94.96	100.00	536	7.30	92.70	100.00	916
16. all occupations <sup>2</sup>	male	36.24	63.76	100.00	4,258	19.43	80.57	100.00	7,912	25.39	74.61	100.00	12,912
17. "	female	65.88	34.12	100.00	2,169	26.51	73.49	100.00	3,772	41.14	58.86	100.00	6,578
18. "	total	46.24	53.76	100.00	6,427	21.71	78.29	100.00	11,684	30.57	69.43	100.00	18,290
2: urban													
1. all occupations	male	19.07	80.93	100.00	1,762	25.20	74.80	100.00	246	20.03	79.97	100.00	2,111
2. "	female	29.20	70.80	100.00	363	21.05	78.95	100.00	76	28.66	71.34	100.00	490
3. "	total	20.80	79.20	100.00	2,125	24.22	75.78	100.00	322	21.58	78.42	100.00	2,601

<sup>1</sup> Information of income accrual type was not available for some persons, hence columns 6 and 10 may not add up to column 14.<sup>2</sup> Includes occupations not listed.

TABLE 9.14 : AVERAGE MONTHLY INCOME OF GAINFULLY EMPLOYED  
POPULATION IN SELECTED OCCUPATION GROUPS BY SEX : ALL-INDIA  
RURAL SAMPLE PERSONS

(NSS 7th round)

occupation	sex	number of sample persons <sup>1</sup>	percentage of esti- mated persons	average monthly income (Rs.)
(1)	(2)	(3)	(4)	(5)
1. farmer	male	95	8.77	270.17
2. "	female	29	2.22	76.35
3. "	total	124	3.25	226.87
4. cultivator	male	1,331	47.41	87.79
5. "	female	419	43.33	51.09
6. "	total	1,750	46.03	78.65
7. share-cropper	male	144	5.52	52.55
8. "	female	30	3.48	39.29
9. "	total	174	4.83	50.27
10. agricultural labour	male	1,900	18.35	18.48
11. "	female	1,575	30.64	14.04
12. "	total	3,475	22.52	16.45
13. all occupations <sup>2</sup>	male	5,726	100.00	45.40
14. "	female	2,964	100.00	21.14
15. "	total	8,690	100.00	37.48

<sup>1</sup> Number of sample persons returning income is shown.

<sup>2</sup> Includes occupations not listed.

incomes of male and female agricultural labour were nearly the same; in other cases the disparity of income between the sexes was quite high. The incomes in the above specific occupation groups may be viewed against the average incomes of Rs. 37 for all occupations combined in the rural sector, Rs. 45 for males and Rs. 21 for females.

9.21. In the urban sector, the average monthly income for all occupations combined was Rs. 65, Rs. 72 for males and Rs. 25 for females. Of the occupations listed, among males, wholesalers and financial operators (Rs. 153) and those in medical, teaching, administrative and technical work (Rs. 131) had high incomes. At the other end of the scale came the agricultural labour (Rs. 17) and the unskilled labour (Rs. 33) with the minimum incomes. As in the rural sector, the sex differential in income is also marked in the urban sector for all the occupations excepting

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (9.15) : AVERAGE MONTHLY INCOME OF GAINFULLY EMPLOYED  
POPULATION IN SELECTED OCCUPATION GROUPS BY SEX :  
ALL-INDIA URBAN SAMPLE PERSONS

(NSS 7th round)

occupation	sex <sup>1</sup>	number of sample persons <sup>2</sup>	percentage of esti- mated persons	average monthly income (Rs.)
(1)	(2)	(3)	(4)	(5)
1. medical, teaching, adminis- trative and technical work	male	347	16.46	130.87
2. "	female	29	5.58	79.78
3. "	total	376	14.28	130.55
4. peon, cleaner, scavenger	male	228	10.07	51.34
5. "	female	33	6.50	21.33
6. "	total	261	9.36	47.55
7. operatives and artisans	male	204	17.33	59.21
8. cultivator	male	37	7.89	91.96
9 agricultural labour	male	125	7.68	19.20
10. "	female	87	23.33	14.15
11. "	total	212	10.80	17.13
12. forestry, fishery, livestock workers	male	88	4.46	42.66
13. "	female	21	6.74	21.33
14. "	total	109	4.92	38.55
15. manufacturer of textiles	male	111	4.75	57.21
16. "	female	30	7.91	26.77
17. "	total	141	5.38	50.74
18. hawker	male	66	2.81	45.61
19. retailer	male	165	7.95	80.40
20. wholesaler and financial operator	male	68	3.59	153.37
21. unskilled labour	male	134	6.51	42.79
22. "	female	74	14.67	16.38
23. "	total	208	8.14	33.41
24. all occupations <sup>3</sup>	male	2,090	100.00	72.34
25. "	female	375	100.00	25.24
26. "	total	2,465	100.00	64.72

<sup>1</sup> Female entries have not been shown for occupations with very small sample sizes.

<sup>2</sup> Number of sample persons returning income is shown.

<sup>3</sup> Includes occupations not listed.



agricultural labour. For all the occupations taken together, the average income of females is 47 per cent of the average income of males in the rural and 35 per cent in the urban sector. As between the two sectors, the average income in the urban sector was 59 per cent higher for males and 19 per cent higher for females than their average incomes in the rural sector, but for cultivators and agricultural labour, the average incomes in the two sectors were of same order.

9.22. In the rural sector, the proportion of employed persons not returning income was as high as 80.25 per cent for farmers, 80.28 per cent for cultivators, 80.75 per cent for share croppers, but only 10.32 per cent for agricultural labour; the reason for this could readily be found from the distribution by income accrual type. For all occupations combined, the proportion not returning income was 52.83 per cent in the rural sector. These proportions are shown in the related Tables in Appendix O. The proportion of employed persons not returning income was naturally much smaller, only 5.23 per cent, in the urban sector.

9.23. The average monthly income for selected industry groups, from the NSS 7th round is shown for the rural sector in Table (9.16), and for the urban sector in Table (9.17). It will be seen that in the rural sector the highest income (Rs. 181) is returned by the industry production of money crop jute and cotton; industry groups trade and commerce, transport and communication and public services come next, but at a much lower level. The lowest average incomes were shown by the industry groups manufacture of textiles, other agricultural productions and forestry, fishery, livestock. In the urban sector, the highest income (Rs. 104) is returned by the industry group public services; trade and commerce, transport and communication, and other manufacturing industries come next in order. In the urban sector too, the lowest average incomes are reported by other agricultural productions.

9.24. *Per capita income*: The average monthly income per gainfully employed person, based on persons reporting any income, was found to be Rs. 37.5 in the rural sector and Rs. 64.7 in the urban sector. Deflating these by the reciprocals of the proportion gainfully employed in the respective sectors, the average monthly per capita income works to Rs. 17 in the rural and Rs. 22 in the urban sector. The incomes considered here are the net incomes in cash or kind in the principal occupation and does not include any imputed values of labour not exchanged. The estimates are very rough and tentative, as will be clear from the way they have been derived.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9.16 : AVERAGE MONTHLY INCOME OF GAINFULLY EMPLOYED POPULATION  
IN INDUSTRIES BY SEX : ALL INDIA RURAL ESTIMATED PERSONS

(NBS 7th round)

industry	male		female		total	
	average monthly income (Rs.)	percentage of total male persons	average monthly income (Rs.)	percentage of total female persons	average monthly income (Rs.)	percentage of total estimated persons
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. production of cereals	54.79	74.78	29.02	90.06	45.01	76.60
2. production of pulses	58.00	0.26	30.16	0.39	40.90	0.30
3. production of money crop, jute and cotton	246.81	0.45	21.27	0.32	186.03	0.40
4. other agricultural productions	30.67	1.12	21.01	0.98	27.59	1.07
5. production of plantation crops	38.86	0.20	36.66	0.26	38.11	0.22
6. forestry, fishery, livestock	25.24	6.13	22.01	2.41	24.57	5.30
7. all agricultural industries (1-6 sub-total)	53.29	82.94	28.65	85.41	44.13	83.79
8. mining	38.64	0.38	20.00	0.15	25.69	0.30
9. manufacture of food products	40.68	1.08	22.13	1.92	32.52	1.36
10. manufacture of textiles	37.65	1.59	21.45	2.84	29.44	2.25
11. other manufacturing	35.38	3.63	24.86	2.22	33.01	2.15
12. manufacturing (9-11 sub-total)	36.86	6.30	22.56	7.98	31.35	6.86
13. construction and sanitary services	34.83	1.10	26.26	0.66	33.40	0.95
14. trade and commerce	62.02	2.77	24.31	1.30	55.50	2.27
15. transport and communication	56.03	0.88	30.00	0.08	53.99	0.61
16. public services	55.27	0.77	46.32	0.04	55.04	0.52
17. professional services	35.47	3.16	24.67	2.60	31.52	2.31
18. public and professional services (16-17 sub-total)	39.35	3.93	24.91	3.64	34.91	3.83
19. others	29.73	1.70	23.83	0.78	28.40	1.39
20. all industries	45.40	100.00	21.14	100.00	37.48	100.00
21. (number of sample persons)	(12,012)		(6,278)		(18,290)	

TABLE 5. AVERAGE MONTHLY INCOME AND PERCENTAGE DISTRIBUTION OF  
GAINFULLY EMPLOYED POPULATION IN INDUSTRIES BY SEX:  
ALL-INDIA URBAN ESTIMATED PERSONS

(NSS 7th round)

INDUSTRY	male		female		total	
	average monthly income (Rs.)	percentage of est. mated persons	average monthly income (Rs.)	percentage of est. mated persons	average monthly income (Rs.)	percentage of est. mated persons
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. production of cereals	44.97	16.85	20.70	31.89	36.73	19.93
2. other agricultural productions	36.17	1.59	22.57	2.43	32.46	1.77
3. forestry, fishing, livestock	45.43	3.79	26.20	5.83	40.71	4.21
4. all agricultural industries (1-3 sub-total)	44.43	22.23	21.61	40.15	37.08	25.91
5. mining	44.09	0.58	30.00	0.41	41.73	0.54
6. manufacture of food products	52.90	5.50	30.00	6.95	48.78	5.80
7. manufacture of textiles	68.59	9.22	29.36	10.09	61.45	9.40
8. other manufacturing	67.42	9.97	22.06	3.68	71.16	8.68
9. manufacturing (6-8 sub-total)	64.62	24.69	28.28	20.72	61.90	23.88
10. construction and sanitary services	69.73	3.99	28.18	2.23	48.31	3.63
11. trade and commerce	97.40	16.61	31.35	3.93	94.11	14.01
12. transport and communication	79.63	8.15	50.83	0.61	78.73	6.60
13. public services	105.27	7.19	40.00	0.30	104.41	5.77
14. professional services	75.62	13.00	40.28	24.75	64.71	15.41
15. public and professional services (13-14 sub-total)	86.16	20.19	40.28	25.05	75.60	21.16
16. others	41.19	3.56	20.00	6.90	37.30	4.25
17. all industries	72.34	100.00	25.24	100.00	64.72	100.00
18. (number of sample persons)	(2,111)		(490)		(2,601)	



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

## APPENDIX O

### LIST OF DETAILED TABLES AND DETAILED TABLES

#### 0.1: LIST OF DETAILED TABLES

In numbering the tables a system of multiple subscripts has been followed. In the numbers within brackets, the left most number refers to the chapter, the middle one to a grouping number for tables under the chapter number, those two together referring to the corresponding table number, and the right most number gives the basis, detailed below:

1. Census of India 1951
2. Combination of NSS rounds
3. Combination of Census and NSS round
4. NSS 4th round
5. NSS 5th round
6. NSS 6th round
7. NSS 7th round

Sub-numbers have been put outside the brackets in split tables (by sex or sector) or tables having the same distribution with different grouping arrangements.

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(NSS 4th, 5th, 6th and 7th round)

item <sup>1</sup>	rural			urban		
	sample 1	sample 2	combined	sample 1	sample 2	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>.1 : 4th round</i>						
1. proportion of population in age group (years)						
1.1. 0-14	40.53	40.67	40.61	37.69	37.43	37.58
1.2. 15-64	56.82	56.66	56.73	59.78	59.63	59.67
1.3. 65-above	2.65	2.67	2.66	2.53	2.94	2.75
2. proportion of population in labour force						
2.1. male (21,428; 9,368)	59.62	59.17	59.39	53.06	51.74	52.42
2.2. female (20,798; 8,648)	32.97	34.68	33.83	11.92	18.92	15.28
2.3. total (42,226; 18,016)	46.45	47.10	46.79	33.20	35.94	34.52
<i>.2 : 5th round</i>						
3. average days of work in primary occupation						
3.1. cultivator (9,253; 292)	19.26	18.77	19.01	24.25	23.53	23.83
3.2. share-cropper (1,310; 67)	18.72	18.14	18.41	18.78	19.87	19.27
3.3. agricultural labour (4,099; 351)	14.12	13.52	13.81	13.78	13.37	13.56
<i>.3 : 6th round</i>						
4. proportion of population in age group (years)						
4.1. 0-14	41.64	40.81	41.22	38.61	37.51	38.01
4.2. 15-64	56.21	56.76	56.49	59.01	60.50	59.72
4.3. 65-above	2.15	2.43	2.29	2.38	2.15	2.27
5. proportion of population in labour force						
5.1. male (11,717; 3,938)	59.61	58.43	59.02	56.72	57.30	57.00
5.2. female (11,194; 3,526)	32.34	33.75	33.05	14.11	16.37	15.20
5.3. total (22,911; 7,464)	46.13	46.33	46.23	36.67	37.68	37.15
<i>.4 : 7th round</i>						
6. proportion of population in age group (years)						
7.1. 0-14	41.20	41.25	41.23	38.47	37.39	37.95
7.2. 15-64	56.34	56.13	56.23	59.04	59.93	59.47
7.3. 65-above	2.46	2.62	2.54	2.49	2.68	2.58
7. proportion of population in labour force						
8.1. male (20,930; 4,082)	59.41	58.75	59.08	53.62	54.32	53.96
8.2. female (20,468; 3,697)	30.70	32.42	31.54	15.19	14.49	14.86
8.3. total (41,398; 7,779)	45.17	45.80	45.48	35.30	35.36	35.33

<sup>1</sup> The two numbers within the brackets represent the number of sample persons for the rural and urban sectors respectively.

TABLE (2.1.1): POPULATION BASE 1951: NUMBER OF PERSONS (000) BY SEX AND AGE IN DIFFERENT POPULATION ZONES  
(Census of India, 1951)

age group (years)	population zone <sup>1</sup>																			all-India	
	north		east		south		west		central		north-west										
	male female		male female		male female		male female		male female		male female		male female		male female						
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1. 0-4	4269	4199	8468	6052	6134	12185	4702	4706	9407	2818	2739	5557	3472	3484	6957	2628	2445	5074	23941	23707	47648
2. 5-9	4197	3901	8097	5752	5570	11323	4675	4668	9342	2713	2622	5335	3444	3416	6859	2382	2174	4556	23163	22350	45513
3. 10-14	3767	3355	7122	5178	4868	10046	4327	4291	8618	2461	2301	4762	3030	2844	5874	2136	1902	4038	20899	19561	40460
4. 15-19	3301	2949	6250	4497	4255	8752	3966	3989	7955	2215	2058	4273	2617	2494	5111	1857	1678	3535	18453	17423	35876
5. 20-24	2911	2631	5542	4001	3838	7839	3459	3636	7095	1984	1838	3822	2318	2327	4645	1596	1497	3093	16269	15767	32036
6. 25-34	5001	4480	9489	7248	6694	13942	5679	5843	11523	3369	3039	6408	4187	4070	8257	2687	2456	5143	28179	26582	54762
7. 35-44	3972	3448	7420	5668	4938	10606	4529	4316	8845	2413	2122	4535	3279	2953	6232	2060	1736	3706	21921	19513	41434
8. 45-64	4565	3952	8517	6142	5619	11761	5279	5060	10339	2439	2360	4799	3294	3198	6492	2450	1925	4375	24169	22115	46283
9. 65-above	1108	1202	2310	1778	1849	3627	1207	1269	2475	570	600	1170	836	984	1840	774	590	1364	6293	6494	12787
10. all ages	33099	30117	63216	46316	43765	90080	37823	37778	75601	20982	19679	40661	26497	25770	52268	18570	16403	34973	183287	173312	356599
11. percentage	9.28	8.44	17.72	12.98	12.27	25.24	10.60	10.59	21.19	5.88	5.52	11.40	7.43	7.22	14.65	5.20	4.60	9.80	51.37	48.63	100.00

<sup>1</sup> Census of India 1951, Paper No. 3, 1954: Excluding Jammu and Kashmir, Andaman and Nicobar Islands and Chandernagore.

Note: The last digit of each number has been individually rounded off to the correct number of thousands. In consequence the totals given in this table are not always identical with the corresponding arithmetic totals of the constituent numbers.



TABLE (2.2.1): GROWTH OF POPULATION OF THE INDIAN UNION

(Census of India)

item	census year					
	1901	1911	1921	1931	1941	1951
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. population <sup>1</sup> (in lakh = 10 <sup>5</sup> )	2355	2490	2481	2755	3128	3569
2. rate of increase (per cent per annum)	-0.02 <sup>2</sup>	0.56	-0.04 <sup>2</sup>	1.04	1.27	1.32

<sup>1</sup> Census of India 1951, Volume I Part IA—Report, pp. 122, 126 : adjusted for area and inflation.

<sup>2</sup> Population actually decreased during the decennium.

TABLE (2.3.1): BIRTH AND DEATH RATES, REGISTERED AND ESTIMATED

(Census of India)

item	years				
	1901-10	1911-20	1921-30	1931-40	1941-50
(1)	(2)	(3)	(4)	(5)	(6)
1. birth rate					
1.1 estimated <sup>1</sup>	48.1	49.2	46.4	45.2	39.9
1.2 registered	37.0	37.0	34.0	34.0	28.0
2. death rate					
2.1 estimated <sup>1</sup>	42.6	48.6	36.3	31.2	27.4
2.2 registered	—	34.0	26.0	23.0	20.0

<sup>1</sup> Quoted in *Census of India, 1951 Paper No. 6, 1954* (p. 44) from "*The Population of India and Pakistan*" by Kingsley Davis, Princeton University Press, 1951.

TABLE (2.4.1): EXPECTATION OF LIFE AT BIRTH

(Census of India<sup>1</sup>)

years		
1901-10	1921-30	1941-50
(1)	(2)	(3)
22.6	26.9	32.5

<sup>1</sup> *Census of India 1951, Paper No. 2, 1954*, p. 28.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (3.2.3): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS IN THE RURAL POPULATION ZONES: ALL-INDIA ESTIMATED HOUSEHOLDS

(NSS 4th Round and Census 1951<sup>1</sup>)

sector	survey	household size group					average size
		1-3	4-6	7-9	10-above	all sizes	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. north	Census	32.87	43.47	17.07	6.69	100.00	4.99
2. „	NSS 4th round	31.28	43.37	17.27	8.08	100.00	5.09
3. east	Census	35.44	43.27	15.63	5.66	100.00	4.82
4. „	NSS 4th round	32.11	44.17	16.16	7.56	100.00	5.02
5. south	Census	33.66	44.28	17.19	4.87	100.00	4.83
6. „	NSS 4th round	33.37	41.13	19.52	5.98	100.00	4.99
7. west	Census	30.98	44.55	18.38	6.09	100.00	5.00
8. „	NSS 4th round	29.20	42.68	19.96	8.16	100.00	5.31
9. central	Census	36.06	44.16	14.69	5.09	100.00	4.73
10. „	NSS 4th round	30.45	49.99	15.25	4.31	100.00	4.79
11. north-west	Census	30.56	43.53	19.49	6.42	100.00	5.11
12. „	NSS 4th round	29.44	43.52	20.83	6.21	100.00	5.17
13. all-India rural	Census	33.36	43.91	17.02	5.71	100.00	4.91
14. „	NSS 4th round	31.48	44.12	17.66	6.74	100.00	5.03
15. all-India urban	Census	37.69	40.63	16.12	5.56	100.00	4.71
16. „	NSS 4th round	39.06	39.46	16.18	5.30	100.00	4.59
17. all-India	Census	34.14	43.33	16.85	5.68	100.00	4.87
18. „	NSS 4th round	32.82	43.30	17.40	6.48	100.00	4.95

<sup>1</sup> Census of India, 1951, Volume I, Part II—A, Demographic Tables, pp. 150—152.

TABLE 3.2.41 PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS IN THE RURAL POPULATION ZONES, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL ESTIMATED HOUSEHOLDS

(NSS 4th round: 938 villages)

rural zone (number of sample households)	sample	household size group					average size
		1-3	4-6	7-9	10-above	all sizes	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. north	1	30.91	43.46	16.51	9.12	100.00	5.12
2.	2	31.70	43.27	18.10	6.93	100.00	5.05
3. (1,344)	combined	31.28	43.37	17.27	8.08	100.00	5.09
4. east	1	30.84	44.71	16.06	8.39	100.00	5.10
5.	2	33.30	43.68	16.24	6.78	100.00	4.95
6. (2,122)	combined	32.11	44.17	16.16	7.56	100.00	5.02
7. south	1	36.83	39.84	18.72	4.61	100.00	4.80
8.	2	29.65	42.53	20.38	7.44	100.00	5.19
9. (1,453)	combined	33.37	41.13	19.52	5.98	100.00	4.99
10. west	1	30.41	43.20	17.77	8.62	100.00	5.25
11.	2	27.97	42.12	22.22	7.69	100.00	5.39
12. (1,172)	combined	29.20	42.68	19.96	8.16	100.00	5.31
13. central	1	32.24	46.71	16.68	4.37	100.00	4.79
14.	2	28.98	52.71	14.04	4.27	100.00	4.79
15. (1,241)	combined	30.45	49.99	15.25	4.31	100.00	4.79
16. north-west	1	30.03	43.87	20.66	5.64	100.00	5.08
17.	2	28.83	43.36	21.01	6.80	100.00	5.26
18. (952)	combined	29.44	43.52	20.83	6.21	100.00	5.17
19. all-India rural	1	32.27	43.46	17.38	6.89	100.00	5.00
20.	2	30.70	44.77	17.94	6.59	100.00	5.05
21. (8,284)	combined	31.48	44.12	17.66	6.74	100.00	5.03



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 3 2 42: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS IN THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES ALL INDIA URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round: 406 urban blocks)

urban size class (number of sample households)	sample	household size group					average size
		1-3	4-6	7-9	10 above	all sizes	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. below 15,000	1	35.36	44.21	16.62	3.91	100.00	4.65
2.	2	32.82	46.48	14.14	6.56	100.00	4.81
3. (789)	combined	34.04	45.39	15.29	5.29	100.00	4.74
4. 15,000-<50,000	1	41.65	40.62	13.95	4.78	100.00	4.36
5.	2	37.43	36.53	19.11	6.93	100.00	4.84
6. (1,002)	combined	39.97	38.98	15.41	5.64	100.00	4.55
7. 50,000-above	1	38.04	40.36	17.41	4.19	100.00	4.61
8.	2	39.54	35.51	18.18	6.77	100.00	4.76
9. (1,431)	combined	38.76	38.00	17.80	5.44	100.00	4.69
10. cities	1	44.92	31.60	17.64	5.84	100.00	4.37
11.	2	49.11	35.93	12.53	2.43	100.00	3.88
12. (716)	combined	47.00	33.76	15.10	4.14	100.00	4.13
13. all-India urban	1	39.43	40.21	15.70	4.52	100.00	4.51
14.	2	38.58	38.63	16.62	6.17	100.00	4.68
15. (3,888)	combined	39.06	39.46	16.18	5.30	100.00	4.59

TABLE 3244. PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round: 938 villages and 406 urban blocks)

household size	rural			urban			all-India		
	sample 1	sample 2	combined	sample 1	sample 2	combined	sample 1	sample 2	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	7.80	6.86	7.33	15.63	14.44	15.07	9.27	8.14	8.70
2	9.75	9.68	9.71	10.47	10.54	10.50	9.89	9.82	9.85
3	14.72	14.16	14.44	13.38	13.60	13.49	14.46	14.06	14.27
4	16.81	16.95	16.88	14.32	14.65	14.47	16.34	16.56	16.45
5	15.53	15.15	15.34	14.03	13.08	13.58	15.25	14.80	15.03
6	11.12	12.67	11.90	11.86	10.90	11.41	11.26	12.38	11.82
7	8.08	9.06	8.57	8.31	8.12	8.22	8.12	8.90	8.51
8	5.68	5.44	5.56	4.35	4.99	4.65	5.43	5.36	5.40
9	3.62	3.44	3.53	3.13	3.51	3.31	3.53	3.46	3.49
10-above	6.89	6.59	6.74	4.52	6.17	5.30	6.45	6.52	6.48
all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
average size	5.00	5.05	5.03	4.51	4.68	4.59	4.91	4.99	4.95
(number of sample households)	(4,148)	(4,136)	(8,284)	(2,004)	(1,884)	(3,888)	(6,152)	(6,020)	(12,172)

TABLE (3.3.4): AVERAGE SIZE OF HOUSEHOLD BY MAJOR RELIGIONS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round : 938 villages and 406 urban blocks)

religion	sample	rural zone						urban size class						all-India cities	all-India
		north	east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000-50,000	50,000 above			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1. Hinduism	1	5.11	5.08	4.78	5.26	4.79	5.13	5.00	4.55	4.64	4.56	4.51	4.47	4.92	
2. "	2	4.96	4.96	5.09	5.42	4.80	5.19	5.01	4.50	4.62	4.63	4.61	3.84	4.94	
3. "	combined	5.04	5.02	4.92	5.34	4.80	5.16	5.00	4.53	4.63	4.58	4.55	4.15	4.93	
4. Islam	1	5.28	5.54	5.80	5.18	5.61	4.81	5.44	4.78	4.63	4.78	5.09	3.59	5.24	
5. "	2	6.11	4.80	6.83	5.39	4.30	5.17	5.55	5.20	5.82	5.24	5.12	3.39	5.44	
6. "	combined	5.59	5.18	6.52	5.33	4.98	5.06	5.50	5.01	5.32	5.09	5.10	3.49	5.34	
7. Sikhism	1	2.50	—	—	—	—	5.07	4.97	3.64	4.22	2.91	3.25	4.33	4.77	
8. "	2	—	—	1.00	—	—	5.39	5.34	4.72	—	—	4.35	5.46	5.28	
9. "	combined	2.50	—	1.00	4.89	—	5.22	5.13	3.98	4.22	2.91	4.09	5.00	4.99	
10. Christianity	1	4.00	3.88	4.54	4.00	3.26	4.00	4.19	3.18	6.20	1.49	4.24	4.77	3.87	
11. "	2	—	4.88	4.95	3.07	4.84	9.00	4.92	5.21	4.58	5.67	5.24	3.79	5.01	
12. "	combined	4.00	4.30	4.82	3.24	3.78	6.14	4.63	4.40	5.06	3.20	5.02	4.52	4.56	
13. all-religions <sup>1</sup>	1	5.12	5.10	4.80	5.25	4.79	5.08	5.00	4.51	4.65	4.36	4.61	4.37	4.91	
14. "	2	5.05	4.95	5.19	5.39	4.79	5.26	5.05	4.68	4.81	4.84	4.78	3.88	4.99	
15. "	combined	5.09	5.02	4.99	5.31	4.79	5.17	5.03	4.59	4.74	4.55	4.69	4.13	4.95	
(number of sample households)		(1,344)	(2,122)	(1,453)	(1,172)	(1,241)	(952)	(8,284)	(6,888)	(7,79)	(1,002)	(1,471)	(7,16)	(1,172)	

<sup>1</sup> Includes religions not listed.



TABLE (3.4.4) : AVERAGE SIZE OF HINDU HOUSEHOLD BY CASTE GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round : 938 villages and 406 urban blocks)

caste	sample	rural zone						urban size class						all India
		north	east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000-30,000	above 30,000		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. upper	1	4.67	5.09	4.08	4.51	7.31	5.13	4.92	4.67	4.51	4.46	4.82	4.62	4.84
2. "	2	4.54	5.10	4.36	4.50	4.21	4.93	4.76	4.55	4.57	5.81	4.09	4.32	4.71
3. "	combined	4.61	5.10	4.19	4.51	5.31	5.04	4.84	4.62	4.54	5.14	4.52	4.46	4.78
4. middle	1	5.18	5.42	4.78	5.69	4.81	5.47	5.30	4.64	5.01	4.67	4.30	4.43	5.17
5. "	2	5.00	5.38	6.28	5.34	5.30	5.18	5.24	4.33	4.19	4.99	4.45	3.48	5.07
6. "	combined	5.08	5.40	5.40	5.57	5.08	5.34	5.27	4.49	4.67	4.79	4.40	3.96	5.12
7. lower	1	5.78	4.81	5.00	5.28	4.71	4.82	5.01	4.54	4.42	4.48	4.68	4.50	4.93
8. "	2	5.17	4.82	5.10	5.49	4.72	5.34	5.03	4.75	4.88	4.35	5.05	4.35	4.99
9. "	combined	5.51	4.82	5.04	5.39	4.72	5.12	5.01	4.62	4.70	4.44	4.82	4.43	4.96
10. scheduled	1	4.87	4.91	4.17	4.82	4.69	4.86	4.71	4.23	4.46	4.81	3.69	4.50	4.68
11. "	2	5.02	4.54	4.90	5.23	4.92	5.14	4.84	4.20	4.44	3.66	4.92	3.20	4.77
12. "	combined	4.93	4.71	4.51	5.02	4.81	4.98	4.77	4.21	4.45	4.19	4.21	3.68	4.71
13. all castes	1	5.11	5.08	4.78	5.26	4.79	5.13	5.00	4.55	4.64	4.56	4.51	4.47	4.92
14. "	2	4.96	4.96	5.09	5.42	4.80	5.19	5.01	4.50	4.62	4.63	4.61	3.84	4.94
15. "	combined	5.04	5.02	4.92	5.34	4.80	5.16	5.00	4.53	4.63	4.58	4.55	4.15	4.93
(number of sample households)		(1,220)	(1,826)	(1,240)	(1,086)	(1,180)	(772)	(7,324)	(3,010)	(604)	(779)	(1,048)	(579)	(10,334)

TABLE (3.6.4): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS BY HOUSEHOLD OCCUPATION  
ALL-INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS  
(NSS 4th round : 938 villages and 406 urban blocks)

household occupation	rural					urban				
	household size group					household size group				
	1-3	4-6	7-9	10- above	all sizes	1-3	4-6	7-9	10- above	all sizes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. farmer	44.62	36.23	11.80	7.35	100.00	39.50	35.97	17.05	7.48	100.00
2. cultivator	20.51	46.22	22.83	10.44	100.00	17.27	42.15	27.23	13.35	100.00
3. share-cropper	26.19	44.02	21.76	8.03	100.00	15.11	57.58	23.04	4.24	100.00
4. agricultural labour	39.15	46.70	12.41	1.74	100.00	38.91	48.12	11.22	1.75	100.00
5. forestry, fishery, livestock workers	32.99	45.19	18.25	3.57	100.00	29.46	61.63	5.67	3.24	100.00
6. mining	55.62	39.38	5.00	—	100.00	50.00	50.00	—	—	100.00
7. manufacturer of food products	50.33	37.15	11.01	1.51	100.00	37.09	37.09	22.18	3.64	100.00
8. manufacturer of textiles	37.41	43.40	16.67	2.52	100.00	37.87	41.67	16.14	4.32	100.00
9. other manufacturers	31.13	47.66	14.42	6.79	100.00	30.07	40.61	20.06	4.26	100.00
10. construction and sanitary services	39.18	37.77	18.95	4.10	100.00	38.20	46.31	12.62	2.86	100.00
11. trade and commerce	31.28	40.57	20.94	7.21	100.00	28.86	41.51	20.56	9.07	100.00
12. transport and communication services	33.53	42.04	19.35	5.08	100.00	43.71	36.64	16.84	2.81	100.00
13. administrative and professional services	39.59	42.75	12.25	5.41	100.00	39.16	37.82	17.14	5.88	100.00
14. all household occupational	31.48	44.12	17.66	6.74	100.00	39.06	39.46	16.18	4.80	100.00
(number of sample households)	1,254									

<sup>1</sup> Includes occupations not listed.

TABLE 3741: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS BY MAJOR RELIGIONS IN THE RURAL POPULATION ZONES:  
ALL-INDIA RURAL ESTIMATED HOUSEHOLDS

(NSS 4th round : 938 villages)

religion	household size	rural zone						all-India rural
		north	east	south	west	central	north-west	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Hinduism	1 - 3	32.61	32.23	33.15	28.99	30.58	30.09	31.74
2. "	4 - 6	42.51	44.66	43.03	42.69	49.99	43.04	44.55
3. "	7 - 9	17.05	15.51	18.34	20.03	15.14	20.27	17.08
4. "	10-above	7.83	7.60	5.48	8.29	4.29	6.60	6.63
5. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
6. "	average size	5.04	5.02	4.92	5.34	4.80	5.16	5.00
7. Islam	1 - 3	20.19	30.49	17.40	24.71	26.00	25.92	24.50
8. "	4 - 6	49.96	41.85	29.89	45.95	49.67	52.91	43.75
9. "	7 - 9	19.93	19.29	40.56	22.00	19.67	13.76	22.74
10. "	10-above	9.92	8.37	12.15	7.34	4.66	7.41	9.01
11. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
12. "	average size	5.59	5.18	6.52	5.33	4.98	5.06	5.50
13. Sikhism	1 - 3	50.00	—	100.00	38.89	—	29.49	30.75
14. "	4 - 6	50.00	—	—	38.89	—	41.79	41.55
15. "	7 - 9	—	—	—	11.11	—	23.46	22.18
16. "	10-above	—	—	—	11.11	—	5.26	5.52
17. "	all sizes	100.00	—	100.00	100.00	—	100.00	100.00
18. "	average size	2.50	—	1.00	4.89	—	5.22	5.13
19. Christianity	1 - 3	—	34.98	42.08	64.70	36.92	—	40.34
20. "	4 - 6	100.00	44.88	30.61	35.30	50.78	57.14	35.08
21. "	7 - 9	—	18.02	19.97	—	12.30	42.86	18.84
22. "	10-above	—	2.12	7.34	—	—	—	5.74
23. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
24. "	average size	4.00	4.30	4.82	3.24	3.78	6.14	4.63
25. all religions <sup>1</sup>	1 - 3	31.28	32.11	33.37	29.20	30.45	29.44	31.48
26. "	4 - 6	43.37	44.17	41.13	42.68	49.99	43.52	44.12
27. "	7 - 9	17.27	16.16	19.52	19.96	15.25	20.83	17.66
28. "	10-above	8.08	7.56	5.98	8.16	4.31	6.21	6.74
29. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
30. "	average size	5.09	5.02	4.99	5.31	4.79	5.17	5.03
(number of sample households)		(1,344)	(2,122)	(1,453)	(1,172)	(1,241)	(952)	(8,284)

<sup>1</sup> Includes religions not listed.



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (3.7.4)2: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS BY MAJOR RELIGIONS IN THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA URBAN ESTIMATED HOUSEHOLDS

(NSS 4th round: 406 urban blocks)

religion	household size	urban size class			cities	all India urban
		below 15,000	15,000- < 50,000	50,000- above		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Hinduism	1 - 3	35.74	38.23	41.16	46.57	39.70
	4 - 6	44.62	42.01	37.80	24.99	40.29
2. "	7 - 9	15.01	15.05	15.77	14.18	15.17
3. "	10-above	4.73	4.71	5.27	4.26	4.84
	all sizes	100.00	100.00	100.00	100.00	100.00
5. "	average size	4.63	4.58	4.55	4.15	4.53
7. Islam	1 - 3	26.68	34.41	31.55	59.01	33.72
8. "	4 - 6	47.36	37.46	40.11	21.73	39.36
9. "	7 - 9	17.07	19.39	21.37	16.15	19.33
10. "	10-above	8.89	8.74	6.97	3.11	7.59
	all sizes	100.00	100.00	100.00	100.00	100.00
11. "	average size	5.32	5.09	5.10	3.49	5.01
13. Sikhism	1 - 3	24.33	72.73	38.24	36.37	42.85
14. "	4 - 6	64.86	27.27	35.29	22.72	39.68
15. "	7 - 9	10.81	—	26.47	31.82	15.88
16. "	10-above	—	—	—	9.09	1.59
	all sizes	100.00	100.00	100.00	100.00	100.00
17. "	average size	4.22	2.91	4.09	5.00	3.98
19. Christianity	1 - 3	29.41	66.94	32.72	38.67	43.81
20. "	4 - 6	47.06	12.81	37.70	38.66	30.77
21. "	7 - 9	17.65	14.05	25.65	18.67	20.60
22. "	10-above	5.88	6.20	3.93	4.00	4.82
	all sizes	100.00	100.00	100.00	100.00	100.00
23. "	average size	5.06	3.20	5.02	4.52	4.40
25. all religions <sup>1</sup>	1 - 3	34.04	39.97	38.76	47.00	39.06
26. "	4 - 6	45.39	38.98	38.00	33.76	39.46
27. "	7 - 9	15.28	15.41	17.80	15.10	16.18
28. "	10-above	5.29	5.64	5.44	4.14	5.30
	all sizes	100.00	100.00	100.00	100.00	100.00
29. "	average size	4.74	4.55	4.69	4.13	4.59
30. "						
(number of sample households)		(739)	(1,002)	(1,431)	(716)	(3,888)

<sup>1</sup> Includes religions not listed.

TABLE 17.13. PERCENTAGE DISTRIBUTION OF HINDU HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS BY CASTE GROUPS IN THE RURAL POPULATION ZONES :

ALL-INDIA RURAL ESTIMATED HOUSEHOLDS

(NSS 4th round : 938 villages)

caste group	household size	rural zone						all-India rural
		north	east	south	west	central	north-west	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. upper	1 - 3	41.92	36.14	50.96	33.33	28.17	35.09	38.68
2. "	4 - 6	38.68	37.43	26.26	46.47	46.92	40.37	38.39
3. "	7 - 9	10.67	14.94	20.85	20.20	9.75	14.68	13.33
4. "	10-above	8.73	11.49	1.93	—	15.16	9.86	9.60
5. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
6. "	average size	4.61	5.10	4.19	4.51	5.31	5.04	4.84
7. middle	1 - 3	33.50	23.93	26.80	26.68	30.46	27.74	30.13
8. "	4 - 6	40.45	41.46	46.19	43.39	46.53	42.38	41.99
9. "	7 - 9	17.74	19.49	18.30	20.60	17.04	23.46	19.25
10. "	10-above	8.31	10.12	8.71	9.33	5.97	6.42	8.63
11. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
12. "	average size	5.08	5.40	5.40	5.57	5.08	5.34	5.27
13. lower	1 - 3	25.36	33.42	32.63	28.73	30.67	26.92	30.91
14. "	4 - 6	44.36	47.69	42.25	42.20	51.30	47.95	45.83
15. "	7 - 9	20.73	13.40	18.59	19.99	14.53	18.72	17.05
16. "	10-above	9.55	5.49	6.53	9.08	3.50	6.41	6.21
17. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
18. "	average size	5.51	4.82	5.04	5.39	4.72	5.12	5.01
19. scheduled	1 - 3	29.52	33.74	34.34	32.58	30.26	34.56	32.49
20. "	4 - 6	47.19	48.12	47.19	43.88	48.53	40.46	46.92
21. "	7 - 9	18.05	13.03	16.55	19.59	16.97	19.37	16.23
22. "	10-above	5.24	5.11	1.92	3.95	4.24	5.61	4.36
23. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
24. "	average size	4.93	4.71	4.51	5.02	4.81	4.98	4.77
25. all castes	1 - 3	32.61	32.23	33.15	28.99	30.58	30.09	31.74
26. "	4 - 6	42.51	44.66	43.03	42.69	49.99	43.04	44.55
27. "	7 - 9	17.05	15.51	18.34	20.03	15.14	20.27	17.08
28. "	10-above	7.83	7.60	5.48	8.29	4.29	6.60	6.63
29. "	all sizes	100.00	100.00	100.00	100.00	100.00	100.00	100.00
30. "	average size	5.04	5.02	4.92	5.34	4.80	5.16	5.00
(number of sample households)		(1,220)	(1,826)	(1,240)	(1,086)	(1,180)	(772)	(7,324)

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 3.7.41. PERCENTAGE DISTRIBUTION OF HINDU HOUSEHOLDS IN HOUSEHOLD SIZE GROUPS BY CASTE GROUPS IN THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA URBAN ESTIMATED HOUSEHOLDS

(NS8 4th round: 406 urban blocks)

caste group	household size	urban size class			cities	all India urban
		below 15,000	15,000-50,000	50,000-above		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. upper	1 - 3	45.32	37.78	41.21	39.16	40.93
2. "	4 - 6	31.41	32.37	36.49	41.00	35.54
3. "	7 - 9	17.83	20.14	16.66	16.25	17.42
4. "	10-above	5.44	9.71	5.64	4.59	6.11
5. "	all sizes	100.00	100.00	100.00	100.00	100.00
6. "	average size	4.64	5.14	4.52	4.46	4.62
7. middle	1 - 3	34.22	39.92	43.51	55.42	42.62
8. "	4 - 6	45.76	35.92	37.74	26.24	36.91
9. "	7 - 9	14.64	16.15	13.97	12.84	14.51
10. "	10-above	5.38	8.01	4.78	5.50	5.96
11. "	all sizes	100.00	100.00	100.00	100.00	100.00
12. "	average size	4.67	4.79	4.40	3.96	4.49
13. lower	1 - 3	33.97	35.67	38.42	25.26	36.04
14. "	4 - 6	45.05	48.09	37.30	48.46	44.00
15. "	7 - 9	16.42	13.72	18.21	13.23	15.77
16. "	10-above	4.56	2.52	6.07	3.05	4.19
17. "	all sizes	100.00	100.00	100.00	100.00	100.00
18. "	average size	4.70	4.44	4.82	4.43	4.62
19. scheduled	1 - 3	34.84	42.56	43.71	54.22	42.12
20. "	4 - 6	32.52	41.70	41.28	26.76	42.89
21. "	7 - 9	9.27	13.99	11.48	17.61	12.21
22. "	10-above	3.37	1.75	3.53	1.41	2.78
23. "	all sizes	100.00	100.00	100.00	100.00	100.00
24. "	average size	4.45	4.19	4.21	3.68	4.21
25. all castes	1 - 3	35.74	38.23	41.16	46.57	39.70
26. "	4 - 6	44.52	42.01	37.80	34.99	40.29
27. "	7 - 9	15.01	15.05	15.77	14.18	15.17
28. "	10-above	4.73	4.71	5.27	4.26	4.84
29. "	all sizes	100.00	100.00	100.00	100.00	100.00
30. "	average size	4.63	4.58	4.55	4.15	4.53
(number of sample households)		(604)	(779)	(1,048)	(579)	(3,010)



TABLE (3.8.4): AVERAGE SIZE OF HOUSEHOLD MONTHLY EXPENDITURE GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES—ALL INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS<sup>1</sup>

(NSS 4th round: 938 villages and 406 urban blocks)

household monthly expenditure group (Rs.)	sample	rural zone					urban size class							
		north	east	south	west	central	north- west	all-India rural	all-India urban	below 15,000	15,000- 50,000	above 50,000	cities	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1. 1-50	1	2.86	3.25	3.52	3.36	3.35	2.68	3.28	2.32	2.54	2.43	2.36	1.27	
2. "	2	2.81	2.98	2.97	3.40	3.38	2.81	3.09	2.42	3.14	2.21	1.96	1.50	
3. "	combined	2.83	3.11	3.27	3.38	3.37	2.75	3.18	2.36	2.85	2.35	2.20	1.37	
4. 51-100	1	4.28	4.37	4.83	5.15	4.81	4.45	4.60	3.81	3.84	2.64	3.96	3.02	
5. "	2	4.56	4.54	4.67	4.69	5.05	4.37	4.65	4.11	4.97	3.83	3.76	3.63	
6. "	combined	4.41	4.45	4.75	4.92	4.93	4.41	4.63	3.95	4.38	3.73	3.88	3.63	
7. 101-150	1	5.42	5.55	5.91	6.41	5.63	5.74	5.68	4.81	5.35	4.74	4.74	3.93	
8. "	2	5.44	5.51	6.05	5.86	5.52	5.66	5.65	5.14	6.16	5.30	4.90	4.27	
9. "	combined	5.43	5.53	5.98	6.09	5.57	5.70	5.66	4.98	5.67	5.02	4.83	4.11	
10. 151-300	1	7.00	7.47	7.41	7.94	7.22	6.66	7.24	5.95	6.20	5.77	6.20	5.22	
11. "	2	7.50	7.03	7.66	7.14	6.77	6.72	7.18	6.55	8.54	6.61	6.36	5.54	
12. "	combined	7.23	7.23	7.52	7.54	6.90	6.60	7.21	6.26	7.04	6.23	6.29	5.38	
13. 301-500	1	9.20	8.92	8.94	10.49	10.17	8.48	9.07	7.29	7.47	6.45	7.77	7.68	
14. "	2	8.33	10.01	9.89	10.06	9.59	8.73	9.35	7.93	8.47	8.73	8.03	6.47	
15. "	combined	8.76	9.45	9.36	10.28	9.71	8.61	9.21	7.60	7.89	7.38	7.91	7.10	
16. 501-above	1	11.05	13.69	9.69	14.18	9.50	9.44	11.95	8.89	11.19	7.38	10.36	7.23	
17. "	2	14.15	14.29	7.57	13.67	5.00	7.25	12.51	9.70	12.90	8.85	10.69	7.82	
18. "	combined	12.84	14.03	9.04	14.00	7.57	8.44	12.24	9.33	11.66	8.09	10.56	7.49	
19. all expenditure groups	1	5.14	5.10	4.98	5.39	4.55	5.38	5.05	4.36	4.39	4.01	4.69	4.23	
20. "	2	5.20	5.10	4.79	5.15	4.56	5.23	4.98	4.90	5.08	4.76	5.09	4.32	
21. "	combined	5.17	5.10	4.89	5.27	4.55	5.30	5.01	4.62	4.70	4.35	4.89	4.28	
(number of sample households)		(1,407)	(2,190)	(1,470)	(1,201)	(1,292)	(985)	(8,545)	(3,877)	(743)	(996)	(1,444)	(694)	

<sup>1</sup> Tables (3.8.4) and (4.7.4) are taken from NSS Draft No. 15, "Consumer expenditure: tables with notes on the fourth round, April-September 1952, Vol. I," based on tabulations for consumption studies: the marginals and the numbers of sample households in these tables may not agree with those given in other tables of this Report.

TABLE (4.5.4): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN MAJOR RELIGIONS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS  
(NSS 4th round: 938 villages and 406 urban blocks)

religion	sample	rural zone					urban size class					all India		
		north	east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000 < 50,000		50,000 above	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. Hinduism	1	86.64	87.82	90.57	94.59	94.06	79.34	88.94	80.55	83.26	82.55	77.41	79.31	87.38
2. "	2	91.00	87.74	78.22	90.27	95.97	77.20	87.13	73.75	80.38	68.30	60.18	83.38	84.88
3. "	combined	88.72	87.78	84.62	92.46	95.10	78.29	88.03	77.35	81.76	76.83	73.42	81.34	86.13
4. Islam	1	12.85	9.90	2.93	2.82	3.65	2.25	6.72	12.47	12.61	8.07	17.33	10.28	7.79
5. "	2	8.52	8.40	7.34	7.65	3.00	5.37	6.95	16.76	16.21	24.77	11.16	10.23	8.60
6. "	combined	10.79	9.12	5.06	5.21	3.29	3.79	6.84	14.49	14.48	14.77	11.79	10.25	8.19
7. Sikhism	1	0.25	—	—	2.15	—	16.08	1.68	1.33	2.68	1.55	0.36	1.14	4.61
8. "	2	—	—	0.07	—	—	15.15	1.31	0.67	—	—	1.23	1.66	1.70
9. "	combined	0.13	—	0.03	1.00	—	15.62	1.49	1.02	1.29	0.93	0.78	1.40	1.41
10. Christianity	1	0.13	2.19	6.20	0.12	2.10	0.16	2.29	4.66	1.45	6.71	3.83	7.11	2.74
11. "	2	—	1.50	14.21	0.57	0.87	0.12	3.50	7.94	3.21	6.93	14.61	2.43	4.63
12. "	combined	0.07	1.83	10.06	0.34	1.43	0.14	2.99	6.29	2.37	6.89	8.77	4.78	1.49
13. other religions	1	0.13	0.09	0.30	0.32	0.19	2.17	0.37	0.99	—	1.12	1.67	2.16	0.48
14. "	2	0.48	2.36	0.16	1.51	0.16	2.16	1.11	0.88	0.20	1.42	1.42	2.20	1.67
15. "	combined	0.29	1.27	0.23	0.90	0.18	2.16	0.74	0.94	0.10	0.67	1.74	2.23	0.58
16. all religions	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
17. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
18. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample households)		(1,544)	(2,122)	(1,452)	(1,172)	(1,241)	(951)	(8,284)	(2,880)	7,790	1,092	1,414	2,790	1,117

TABLE (4.6.4): PERCENTAGE DISTRIBUTION OF HINDU HOUSEHOLDS IN CASTE GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES ALL INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS (NSS 4th round : 938 villages and 406 urban blocks)

caste	sample	rural zone						north all India rural	all India urban	urban size class				all India
		north	east	south	west	central				below 15,000	15,000-50,000	50,000-above	cities	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. upper	1	20.22	8.99	2.83	2.24	2.39	12.05	8.34	17.08	15.97	7.88	25.63	20.96	9.84
2. "	2	16.22	12.40	2.21	2.08	3.89	10.46	8.58	17.83	12.37	14.54	21.90	23.75	9.92
3. "	combined	18.26	10.76	2.56	2.16	3.21	11.28	8.45	17.42	14.14	10.27	23.93	22.37	9.88
4. middle	1	31.09	36.64	4.80	12.79	11.57	40.30	22.65	27.27	33.68	27.40	16.80	44.16	23.15
5. "	2	45.44	31.43	4.20	7.14	12.08	37.02	23.63	32.29	23.66	30.72	36.13	42.03	24.90
6. "	combined	38.12	33.94	4.53	10.06	11.85	38.72	23.15	29.53	28.57	28.59	25.63	43.08	24.16
7. lower	1	20.33	30.26	70.76	73.62	66.13	19.75	46.21	42.79	33.60	55.66	42.44	24.80	45.61
8. "	2	16.57	29.33	70.98	78.95	66.51	29.83	46.06	35.32	50.26	35.56	28.79	21.87	44.49
9. "	combined	18.49	29.78	70.86	76.19	66.34	24.61	46.14	39.42	42.09	48.47	36.21	23.32	45.07
10. scheduled	1	28.36	24.11	21.61	11.35	19.91	27.90	22.80	12.86	16.75	9.04	15.13	10.08	21.10
11. "	2	21.77	26.84	22.61	11.83	17.52	22.69	21.73	14.56	13.71	19.18	13.16	12.35	20.69
12. "	combined	25.13	25.52	22.05	11.59	18.60	25.39	22.26	13.63	15.20	12.67	14.23	11.23	20.89
13. all castes	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
14. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
15. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample households)		(1,220)	(1,826)	(1,240)	(1,086)	(1,180)	(772)	(7,324)	(3,010)	(604)	(779)	(1,048)	(579)	(10,334)



TABLE (4.7.4): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN HOUSEHOLD MONTHLY EXPENDITURE GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED HOUSEHOLDS<sup>1</sup>

(NSS 4th round: 938 villages and 406 urban blocks)

household monthly expenditure group (Rs.)	sample	rural zone						urban zone class				
		north			central			north-all-India rural			all-India urban	
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	(2)											(14)
1. 1-50	1	16.10	27.88	34.81	31.63	43.88	15.78	28.71	23.33	24.08	30.13	17.08
2. "	2	21.13	27.50	32.74	24.29	46.46	17.91	29.59	18.84	31.20	19.47	11.67
3. "	combined	18.52	27.68	33.82	27.97	45.28	16.84	29.15	21.21	27.33	25.30	14.77
4. 51-100	1	34.66	32.74	35.35	35.27	33.99	27.63	33.65	32.86	38.39	31.14	34.43
5. "	2	33.44	33.25	37.87	37.17	31.70	30.27	34.00	32.22	41.61	32.43	27.33
6. "	combined	34.07	33.00	36.56	36.21	32.74	28.95	33.83	32.57	39.87	31.72	30.99
7. 101-150	1	23.09	18.73	15.08	15.35	11.58	25.04	17.99	17.52	17.45	16.64	19.10
8. "	2	20.75	17.60	16.01	21.12	11.53	21.25	17.41	19.52	13.60	20.09	23.89
9. "	combined	21.97	18.15	15.53	18.23	11.55	23.15	17.70	18.46	15.69	18.20	21.49
10. 151-300	1	21.50	14.79	11.19	14.19	9.51	22.72	15.18	17.52	15.20	13.59	20.30
11. "	2	19.33	15.83	10.44	14.45	7.97	21.56	14.40	20.23	19.19	20.21	22.28
12. "	combined	20.45	15.33	10.83	14.32	8.67	22.14	14.79	18.80	12.87	16.59	22.71
13. 301-500	1	3.97	3.85	3.07	2.71	0.67	6.21	3.34	5.75	3.19	6.16	5.68
14. "	2	4.34	3.34	2.70	2.50	2.11	6.80	3.42	5.90	2.67	5.16	7.48
15. "	combined	4.15	3.61	2.89	2.61	1.46	6.50	3.38	5.82	2.93	5.71	6.49
16. 501-above	1	0.68	2.01	0.50	0.85	0.37	2.62	1.13	3.02	1.69	2.14	3.01
17. "	2	1.01	2.44	0.24	0.47	0.23	2.51	1.18	3.29	0.82	2.64	4.32
18. "	combined	0.84	2.23	0.37	0.66	0.40	2.12	1.15	3.14	1.29	2.48	3.64
19. all expenditure groups	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
20. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
21. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample households)		(1,497)	(2,199)	(1,470)	(1,291)	(1,292)	(985)	(8,343)	(2,877)	(717)	000	1 000

<sup>1</sup> See footnote to Table (3.8.4).

TABLE 9.1.1: PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY SEX, ALL INDIA RURAL AND URBAN

(Source of India, 1951)

(1)	(2)	(3)		
		male	female	total
1. 0 - 14	rural	38.94	38.09	38.53
2. "	urban	34.53	37.82	36.06
3. "	all-India	36.18	38.36	36.36
4. 15 - 24	rural	16.48	17.28	16.87
5. "	urban	20.08	19.78	19.94
6. "	all-India	17.10	17.68	17.38
7. 25 - 34	rural	15.17	15.66	15.41
8. "	urban	17.34	15.07	16.57
9. "	all-India	15.84	15.66	15.60
10. 35 - 44	rural	12.23	11.56	11.90
11. "	urban	12.56	11.11	11.80
12. "	all-India	12.29	11.49	11.90
13. 45 - 54	rural	14.00	13.36	13.66
14. "	urban	12.95	12.63	12.80
15. "	all-India	13.63	13.24	13.54
16. 55 - above	rural	3.18	3.45	3.31
17. "	urban	2.54	2.99	2.74
18. "	all-India	2.07	2.37	2.22
19. All ages	rural	100.00	100.00	100.00
20. "	urban	100.00	100.00	100.00
21. "	all-India	100.00	100.00	100.00

1. Unemployed age distribution excludes disabled persons, (Source of India, 1951, Paper No. 1, 1951)

ONE CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION  
TABLE (2.3.2). PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY SEX  
ALL INDIA RURAL AND URBAN ESTIMATED PRESENT

NBS 6th round 649 villages and 636 urban blocks.  
NBS 7th round 601 villages and 641 urban blocks.

		rural			urban			all India		
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 5	sixth	22.26	20.61	21.20	19.35	19.99	19.72	21.79	20.29	21.01
"	seventh	21.25	21.22	21.26	19.62	19.65	19.30	20.00	20.07	20.01
2. 6 - 11	sixth	12.06	12.45	12.06	11.07	12.00	11.03	12.61	12.07	12.00
"	seventh	12.26	12.90	12.12	11.00	12.30	11.77	12.00	12.00	12.00
3. 12 - 19	sixth	11.23	10.64	10.95	12.16	11.55	11.00	11.26	10.77	11.00
"	seventh	11.15	10.06	10.92	11.22	11.67	11.34	11.10	10.01	10.00
4. 20 - 24	sixth	8.51	10.10	9.20	9.50	10.15	9.01	9.06	10.10	9.27
"	seventh	8.07	8.91	8.66	10.24	9.66	9.07	9.61	9.00	9.71
5. 25 - 29	sixth	8.97	9.35	9.16	10.00	9.07	10.20	9.23	9.00	9.31
"	seventh	9.04	9.49	9.26	9.96	10.02	10.29	9.20	9.07	9.63
6. 30 - 34	sixth	7.06	7.27	7.17	7.71	7.65	7.30	7.10	7.20	7.23
"	seventh	7.15	7.47	7.31	8.04	7.63	7.79	7.20	7.65	7.20
7. 35 - 39	sixth	6.00	6.35	6.00	6.77	7.12	6.94	6.90	6.00	6.72
"	seventh	7.46	6.06	6.77	7.05	6.00	7.00	7.34	6.00	6.02
8. 40 - 44	sixth	5.44	5.45	5.45	5.70	6.22	5.90	5.60	5.36	5.62
"	seventh	5.27	5.56	5.41	5.42	5.07	5.03	5.20	5.01	5.45
9. 45 - 49	sixth	4.47	4.21	4.34	5.44	5.00	4.32	4.62	4.11	4.37
"	seventh	4.50	4.22	4.41	4.07	4.67	4.70	4.00	4.27	4.47
10. 50 - 54	sixth	3.06	3.00	3.07	3.00	3.73	3.70	3.00	3.70	3.00
"	seventh	3.79	3.55	3.67	3.71	3.41	3.37	3.77	3.53	3.00
11. 55 - 59	sixth	3.02	3.11	3.06	3.80	3.20	3.07	3.00	3.13	3.07
"	seventh	3.12	3.12	3.12	3.01	2.74	2.70	3.07	3.00	3.00
12. 60 - 64	sixth	2.56	2.47	2.52	2.00	2.10	2.43	2.30	2.42	2.30
"	seventh	2.57	2.00	2.74	2.25	2.52	2.30	2.33	2.04	2.00
13. 65 - 69	sixth	1.30	1.30	1.30	0.06	1.63	1.20	1.33	1.42	1.37
"	seventh	1.33	1.45	1.30	1.31	1.42	1.37	1.32	1.45	1.30
14. 70 - 74	sixth	1.73	2.01	1.87	2.03	1.76	1.80	1.75	1.80	1.87
"	seventh	1.90	2.39	2.14	2.16	2.10	2.16	1.80	2.37	2.10
15. 75 - 79	sixth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
"	seventh	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
16. 80 - 84	sixth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
"	seventh	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
17. 85 - 89	sixth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
"	seventh	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
18. 90 - 94	sixth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
"	seventh	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
19. 95 - 99	sixth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
"	seventh	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
20. 100 and over	sixth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
"	seventh	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

(number of sample persons) (32,647) (31,662) 64,309



TABLE 3.3.6 PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY SEX,  
 FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN  
 ESTIMATED PERSONS

(NSS 6th round: 949 villages and 438 urban blocks)

age group years	sample	rural			urban			all-India		
		male	female	total	male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 14	1	41.81	41.47	41.64	38.02	38.61	38.61	41.31	41.05	41.18
2. "	2	42.21	39.35	40.81	35.67	39.16	37.35	41.29	39.34	40.34
3. "	combined	42.01	40.41	41.22	37.22	38.87	38.01	41.30	40.20	40.76
4. 15 - 24	1	19.08	19.06	19.51	20.55	21.09	20.80	19.31	20.12	19.71
5. "	2	17.51	20.34	18.90	21.10	20.22	20.68	18.02	20.32	19.14
6. "	combined	18.29	20.15	19.20	20.80	20.67	20.74	18.66	20.22	19.42
7. 25 - 34	1	14.67	14.10	14.39	15.89	15.30	15.61	14.86	14.28	14.57
8. "	2	14.93	15.27	15.10	15.72	15.57	15.65	15.04	15.31	15.17
9. "	combined	14.80	14.68	14.75	15.82	15.43	15.63	14.95	14.70	14.87
10. 35 - 44	1	10.56	10.83	10.69	10.87	10.84	10.86	10.61	10.83	10.72
11. "	2	11.15	10.29	10.72	12.58	11.98	12.29	11.35	10.51	10.94
12. "	combined	10.85	10.56	10.71	11.69	11.39	11.54	10.98	10.67	10.83
13. 45 - 64	1	11.90	11.38	11.62	11.93	11.52	11.74	11.90	11.36	11.64
14. "	2	11.89	12.19	12.04	12.66	11.03	11.88	12.00	12.03	12.02
15. "	combined	11.90	11.76	11.83	12.27	11.29	11.81	11.95	11.69	11.83
16. 65-above	1	1.98	2.31	2.15	2.14	2.64	2.38	2.01	2.36	2.18
17. "	2	2.31	2.56	2.43	2.27	2.04	2.15	2.30	2.49	2.39
18. "	combined	2.15	2.44	2.29	2.20	2.35	2.27	2.16	2.43	2.29
19. all ages	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
20. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
21. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)		(11,717)	(11,194)	(22,911)	(3,938)	(3,526)	(7,464)	(15,655)	(14,720)	(30,375)

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (5.3.7): PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY SEX  
FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN  
ESTIMATED PERSONS

(N88 7th round: 951 villages and 441 urban blocks)

age group (years)	sample	rural			urban			all-India		
		male	female	total	male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 14	1	41.28	41.12	41.20	37.24	39.82	38.47	40.58	40.92	40.74
2. "	2	41.97	40.51	41.25	36.23	38.64	37.39	41.01	40.22	40.62
3. "	combined	41.62	40.82	41.23	36.73	39.26	37.99	40.78	40.56	40.68
4. 15 - 24	1	17.95	18.85	18.39	19.98	21.17	20.55	18.30	19.22	18.76
5. "	2	17.67	18.96	18.30	21.75	19.89	20.87	18.35	19.10	18.72
6. "	combined	17.81	18.90	18.35	20.84	20.56	20.70	18.33	19.17	18.74
7. 25 - 34	1	15.55	14.90	15.23	17.75	15.12	16.49	15.93	14.93	15.44
8. "	2	14.90	14.53	14.77	15.92	15.05	15.50	15.15	14.61	14.89
9. "	combined	15.28	14.72	15.00	16.87	15.08	16.02	15.55	14.78	15.17
10. 35 - 44	1	11.11	10.31	10.71	11.63	10.51	11.10	11.20	10.35	10.78
11. "	2	10.54	10.91	10.73	11.01	11.89	11.42	10.62	11.07	10.84
12. "	combined	10.83	10.61	10.72	11.33	11.17	11.26	10.92	10.70	10.81
13. 45 - 64	1	11.95	12.05	12.01	10.96	10.83	10.90	11.78	11.86	11.82
14. "	2	12.42	12.24	12.33	12.38	11.89	12.14	12.41	12.18	12.30
15. "	combined	12.18	12.15	12.16	11.64	11.33	11.49	12.09	12.02	12.05
16. 65-above	1	2.16	2.76	2.46	2.44	2.55	2.49	2.21	2.72	2.46
17. "	2	2.41	2.85	2.62	2.71	2.66	2.68	2.46	2.82	2.63
18. "	combined	2.28	2.80	2.54	2.57	2.60	2.58	2.33	2.77	2.55
19. all ages	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
20. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
21. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)		(20,930)	(20,468)	(41,398)	(4,082)	(3,697)	(7,779)	(25,012)	(24,165)	(49,177)

TABLE (5.4.71): PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES ALL INDIA RURAL AND URBAN ESTIMATED MALES

(NSS 7th round: 951 villages and 441 urban blocks)

age group (years)	sample	rural zone							urban size class					all India
		north	east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000 < 50,000	50,000 < 100,000	100,000 & above	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. 0 - 11	1	37.35	34.51	30.21	31.26	33.44	36.49	34.36	30.63	29.98	30.80	33.09	32.73	31.81
2. "	2	33.67	36.83	35.29	35.12	32.23	36.31	34.99	29.15	28.54	30.92	37.79	31.63	34.71
3. "	combined	35.60	35.65	32.85	31.69	32.86	36.40	34.67	29.91	29.29	30.86	30.41	31.22	33.87
4. 12 - 16	1	10.79	9.61	11.90	10.47	12.35	12.02	11.03	10.93	10.05	12.75	12.50	10.78	7.76
5. "	2	11.51	11.22	10.42	11.38	11.65	10.63	11.14	11.52	11.39	13.85	10.82	10.94	11.21
6. "	combined	11.13	10.46	11.13	10.94	12.02	11.35	11.08	11.22	10.69	13.26	11.65	10.86	11.10
7. 17 - 21	1	7.03	9.46	8.94	7.48	7.70	8.50	8.30	10.41	11.13	11.23	7.91	10.55	8.00
8. "	2	8.63	7.21	7.79	8.54	6.81	9.04	7.85	10.07	12.06	6.81	11.33	9.31	8.22
9. "	combined	7.79	8.36	8.34	8.02	7.27	8.76	8.08	10.24	11.58	9.17	9.63	9.98	8.44
10. 22 - 31	1	14.10	17.33	16.47	16.60	17.49	13.05	16.00	17.98	19.97	19.24	13.59	16.31	18.56
11. "	2	17.36	16.69	13.96	16.08	19.07	15.19	16.43	18.06	16.70	15.41	18.38	20.00	21.59
12. "	combined	15.64	17.01	15.17	16.33	18.25	14.08	16.22	18.02	18.40	17.45	16.61	17.99	20.18
13. 32 - 41	1	13.89	12.83	13.13	14.58	12.75	13.63	13.33	13.60	11.38	13.72	12.67	11.30	23.92
14. "	2	10.47	12.05	12.29	12.22	13.44	11.15	11.93	13.10	11.74	13.27	14.04	12.17	15.92
15. "	combined	12.27	12.45	12.69	13.37	13.08	12.44	12.64	13.37	11.55	13.51	13.36	11.75	19.64
16. 42 - 61	1	13.43	13.58	15.06	13.23	14.20	12.80	13.81	13.12	13.21	11.34	18.23	12.43	13.36
17. "	2	15.39	12.44	16.36	14.22	13.60	12.85	14.19	14.47	13.51	17.10	15.78	13.47	12.30
18. "	combined	14.37	13.02	15.74	13.75	13.91	12.82	13.99	13.77	13.36	14.03	17.00	12.91	12.80
19. 62 & above	1	3.41	2.68	4.29	3.38	2.07	3.51	3.17	3.33	4.28	0.92	2.01	5.81	2.50
20. "	2	2.97	3.56	3.89	2.44	3.20	4.83	3.47	3.63	6.06	2.64	1.86	2.48	4.13
21. "	combined	3.20	3.11	4.08	2.90	2.61	4.15	3.32	3.47	5.13	1.72	1.94	4.29	3.37
22. all ages	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
23. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
24. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)		(3,714)	(5,052)	(3,378)	(2,846)	(3,107)	(2,833)	(20,930)	(4,082)	(769)	(781)	(374)	(1,160)	(798)



TABLE (5.4.7)2: PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED FEMALES

(NSS 7th round: 951 villages and 441 urban blocks)

(NSS 7th Round : 351 villages and 411 urban blocks)

age group (years)	sample	rural zone					urban size class										all- India
		north		south		west	central	north- west	all-India rural	all-India urban	below 15,000	15,000 < 50,000	50,000 < 100,000	100,000- above	citrus		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1. 0 - 11	1	34.85	35.86	31.33	34.47	33.14	37.16	34.36	32.88	32.35	37.21	32.18	30.38	30.10	34.11		
2. "	2	34.69	33.96	31.64	35.93	34.04	36.09	34.08	31.21	27.22	30.40	28.89	34.98	36.83	33.63		
3. "	combined	34.77	34.97	31.48	35.24	33.59	36.63	34.23	32.07	29.97	33.95	30.47	32.44	33.78	33.88		
4. 12 - 16	1	9.87	10.05	13.14	9.67	9.88	12.39	10.77	11.15	11.34	7.06	13.09	14.37	10.93	10.83		
5. "	2	10.84	10.17	9.53	9.99	10.52	12.45	10.43	11.78	13.17	13.63	12.45	8.88	9.54	10.64		
6. "	combined	10.34	10.10	11.37	9.83	10.20	12.41	10.61	11.45	12.19	10.21	12.75	11.93	10.17	10.74		
7. 17 - 21	1	8.21	8.78	9.36	9.31	8.07	9.54	8.80	9.70	9.86	10.57	8.62	9.66	9.18	8.96		
8. "	2	9.67	9.24	7.91	9.37	9.34	9.96	9.17	9.06	8.88	9.03	8.32	10.46	7.79	9.15		
9. "	combined	8.92	9.00	8.65	9.34	8.70	9.75	8.98	9.44	9.40	9.84	8.46	10.02	8.42	9.05		
10. 22 - 31	1	17.96	17.80	15.51	16.91	18.06	16.41	17.22	18.63	18.85	19.90	16.58	16.02	23.69	17.44		
11. "	2	16.04	18.63	17.24	15.91	16.92	14.80	16.91	17.67	18.52	15.84	17.55	18.01	18.66	17.03		
12. "	combined	17.03	18.18	16.36	16.40	17.49	15.63	17.06	18.17	18.79	17.96	17.08	16.91	20.94	17.24		
13. 32 - 41	1	11.41	10.15	12.92	11.67	13.05	10.56	11.56	11.41	11.04	11.29	12.35	11.59	11.23	11.54		
14. "	2	10.38	10.55	13.63	11.25	12.28	11.91	11.60	12.67	13.38	14.59	13.66	10.00	10.99	11.52		
15. "	combined	10.91	10.34	13.27	11.45	12.66	11.22	11.58	12.01	12.13	12.86	13.04	10.88	11.19	11.66		
16. 42 - 61	1	13.50	13.08	14.70	13.75	13.98	10.57	13.43	12.62	13.21	11.00	13.61	13.71	11.37	13.31		
17. "	2	14.33	13.83	16.12	13.58	13.42	9.70	13.89	13.95	13.16	14.23	17.18	13.79	12.36	13.59		
18. "	combined	13.91	13.44	15.39	13.65	13.70	10.15	13.65	13.27	13.19	12.55	15.48	13.69	11.86	13.49		
19. 62-above	1	4.20	4.28	3.04	4.22	3.82	3.37	3.86	3.52	3.35	2.97	3.55	4.25	3.50	3.81		
20. "	2	4.05	3.62	3.93	3.97	3.48	5.09	3.92	3.66	5.47	2.58	1.95	3.47	4.03	3.88		
21. "	combined	4.12	3.97	3.48	4.09	3.66	4.21	3.89	3.59	4.33	2.63	2.72	4.13	3.78	3.85		
22. all ages	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
23. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
24. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
(number of sample persons)		(3,591)	(1,954)	(3,375)	(2,916)	(3,057)	(2,565)	(29,468)	(2,697)	(7,21)	(7,40)	(599)	(1,071)	(64)	(1,1)		

TABLE (5.4.7)3: PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS

(NSS 7th round : 951 villages and 441 urban blocks)																			
age group (years)	sample	rural zone						all-India urban	urban size class										
		north			north- west	all-India rural			below 15,000	15,000-50,000			50,000-100,000	above 100,000					
		(3)	(4)	(5)		(6)	(7)			(8)	(9)	(10)			(11)	(12)	(13)	(14)	(15)
(1)	(2)																		
1. 0 - 11	1	36.15	35.18	30.78	34.37	33.30	36.80	34.36	31.70	31.14	33.89	32.66	31.60	27.10	33.91				
2. "	2	34.18	35.46	33.52	35.54	33.13	36.21	34.55	30.13	27.91	30.67	28.32	33.22	30.06	33.84				
3. "	combined	35.20	35.31	32.15	34.96	33.22	36.53	34.45	30.94	29.62	32.36	30.45	32.33	28.70	33.87				
4. 12 - 16	1	10.35	9.83	12.54	10.06	11.14	12.19	10.90	11.04	10.68	10.00	12.78	12.52	9.13	10.92				
5. "	2	11.18	10.71	9.98	10.66	11.08	11.51	10.79	11.65	12.24	13.74	11.60	9.97	9.30	10.93				
6. "	combined	10.74	10.26	11.25	10.37	11.11	11.86	10.85	11.33	11.42	11.77	12.18	11.37	9.33	10.93				
7. 17 - 21	1	7.60	9.12	9.16	8.41	7.88	9.00	8.55	10.12	10.51	10.91	8.24	10.12	9.13	8.81				
8. "	2	9.15	8.19	7.85	8.97	8.08	9.49	8.50	9.59	10.54	7.91	9.88	9.85	10.09	8.07				
9. "	combined	8.34	8.67	8.50	8.70	7.98	9.24	8.52	9.86	10.52	9.49	9.08	10.00	9.65	8.74				
10. 22 - 31	1	15.97	17.57	15.97	16.76	17.76	14.66	16.60	18.29	19.42	19.55	14.98	16.17	20.77	16.49				
11. "	2	16.71	17.62	15.56	15.99	17.99	15.00	16.67	17.86	17.66	15.62	17.98	19.06	20.29	16.85				
12. "	combined	16.33	17.60	15.76	16.36	17.87	14.82	16.63	18.09	18.59	17.70	16.51	17.47	20.51	16.87				
13. 32 - 41	1	12.69	11.48	13.02	13.09	12.90	12.17	12.46	12.55	11.21	12.55	12.53	11.48	18.44	12.17				
14. "	2	10.42	11.33	12.94	11.72	12.86	11.51	11.76	12.90	12.52	13.92	13.86	11.15	13.73	11.95				
15. "	combined	11.60	11.41	12.98	12.39	12.88	11.85	12.12	12.72	11.83	13.20	13.20	11.33	15.90	12.22				
16. 42 - 61	1	13.45	13.33	14.88	13.50	14.10	11.73	13.61	12.88	13.22	11.19	16.08	13.04	12.50	13.50				
17. "	2	14.86	13.11	16.24	13.89	13.52	11.33	14.04	14.23	13.35	15.68	16.46	14.56	12.29	14.08				
18. "	combined	14.14	13.22	15.57	13.71	13.81	11.53	13.83	13.53	13.27	13.31	16.27	13.28	12.38	13.78				
19. 62-above	1	3.79	3.49	3.65	3.81	2.92	3.45	3.52	3.42	3.82	1.91	2.73	5.07	2.93	3.50				
20. "	2	3.50	3.58	3.91	3.23	3.34	4.95	3.69	3.64	5.78	2.46	1.90	3.19	4.04	3.69				
21. "	combined	3.65	3.53	3.79	3.51	3.13	4.17	3.60	3.53	4.75	2.17	2.31	4.22	3.53	3.59				
22. all ages	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00				
23. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00				
24. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00				
(number of sample persons)		(7,305) (10,006) (6,753) (5,792) (6,144) (5,398) (41,398) (7,779) (1,491) (1,531) (1,083) (2,221) (1,443) (49,177)																	

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 5.5.2: SEX RATIO (NUMBER OF MALES PER 100 FEMALES) OF POPULATION BY AGE GROUPS FROM TWO INDEPENDENT SAMPLES: ALL INDIA RURAL AND URBAN ESTIMATED PERSONS

(NSS 6th round: 949 villages and 438 urban blocks,  
NSS 7th round: 951 villages and 441 urban blocks)

age group (years)	sample	6th round			7th round		
		rural	urban	all-India	rural	urban	all-India
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. 0 - 14	1	103	113	104	102	103	102
2. "	2	112	99	110	107	103	106
3. "	combined	107	106	107	104	103	104
4. 15 - 44	1	101	113	103	103	116	105
5. "	2	99	112	101	101	114	103
6. "	combined	100	112	102	102	115	104
7. 45 - 64	1	107	116	109	101	111	102
8. "	2	101	125	104	105	115	106
9. "	combined	104	120	106	103	113	104
10. 65-above	1	88	91	88	80	105	83
11. "	2	94	121	97	87	113	91
12. "	combined	91	104	93	83	109	87
13. all ages	1	102	112	104	101	110	103
14. "	2	104	109	105	103	110	104
15. "	combined	103	111	104	102	110	104
(number of sample persons)		(22,911)	(7,464)	(30,375)	(41,398)	(7,779)	(49,177)



TABLE 62.7) PERCENTAGE DISTRIBUTION OF POPULATION IN MARITAL STATUS GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS

(NS8 7th round : 951 villages and 441 urban blocks)

marital status	sample	male			female			total		
		rural	urban	all-India	rural	urban	all-India	rural	urban	all-India
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. single	1	50.13	54.75	50.92	39.95	43.11	40.45	45.07	49.19	45.76
2. "	2	50.56	54.00	51.13	38.59	41.98	39.12	44.66	48.28	45.25
3. "	combined	50.34	54.39	51.02	39.29	42.57	39.81	44.87	48.75	45.51
4. married	1	44.80	41.02	44.16	46.34	43.89	45.95	45.57	42.39	45.04
5. "	2	43.97	42.35	43.70	47.54	44.24	47.02	45.73	43.25	45.33
6. "	combined	44.40	41.66	43.93	46.93	44.06	46.47	45.65	42.80	45.18
7. widowed or separated	1	5.07	4.23	4.92	13.71	13.00	13.60	9.36	8.42	9.20
8. "	2	5.47	3.65	5.17	13.87	13.78	13.86	9.61	8.47	9.42
9. "	combined	5.26	3.95	5.05	13.78	13.37	13.72	9.48	8.45	9.31
10. all marital status	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
11. "	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
12. "	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)		(20,930)	(4,082)	(25,012)	(20,468)	(3,697)	(24,165)	(41,398)	(7,779)	(49,177)

TABLE (6.3.7)1: PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY MARITAL STATUS AND SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL ESTIMATED PERSONS  
(NSS 7th round : 951 villages)

age group (years)	marital status	male			female			total		
		sample 1		sample 2 combined	sample 1		sample 2 combined	sample 1		sample 2 combined
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 16	single	94.25	94.04	94.15	86.35	84.65	85.53	90.34	89.49	89.93
2. "	married	5.44	5.76	5.60	13.26	15.14	14.17	9.31	01.30	9.79
3. "	widowed or separated	0.31	0.20	0.25	0.39	0.21	0.30	0.35	0.31	0.28
4. "	all marital status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
5. 17 - 26	single	34.73	32.87	33.82	4.50	4.37	4.43	19.20	18.22	18.72
6. "	married	63.35	64.96	64.14	91.81	91.77	91.80	77.97	78.74	78.35
7. "	widowed or separated	1.92	2.17	2.04	3.69	3.86	3.77	2.83	3.04	2.93
8. "	all marital status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
9. 27-above	single	3.66	4.31	3.98	0.35	0.32	0.34	2.04	2.35	2.19
10. "	married	84.65	82.08	83.08	64.33	64.27	64.29	74.38	73.30	73.86
11. "	widowed or separated	12.29	13.61	12.94	35.32	35.41	35.37	23.58	24.35	23.95
12. "	all marital status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13. all ages	single	50.13	50.56	50.34	39.95	38.59	39.29	45.07	44.06	44.87
14. "	married	44.80	43.97	44.40	46.34	47.54	46.93	45.57	45.73	45.65
15. "	widowed or separated	5.07	5.47	5.26	13.71	13.87	13.78	9.36	9.61	9.48
16. "	all marital status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)		(20,930)			(20,466)			(41,396)		

TABLE (6.3.7)2: PERCENTAGE DISTRIBUTION OF POPULATION IN AGE GROUPS BY MARITAL STATUS AND SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA URBAN ESTIMATED PERSONS  
(N88 7th round: 441 urban blocks)

age group (years)	marital status	male			female			total	
		sample 1	sample 2	combined	sample 1	sample 2	combined	sample 1	sample 2 combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10) (11)
1. 0 - 16	single	99.21	98.82	99.03	91.03	92.34	91.65	95.19	95.64
2. "	married	0.71	1.18	0.93	8.76	7.66	8.24	4.67	4.36
3. "	widowed or separated	0.08	—	0.04	0.21	—	0.11	0.14	—
4. "	all marital status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
5. 17 - 26	single	59.71	56.71	58.19	11.35	10.10	10.77	35.71	35.68
6. "	married	39.17	43.09	41.15	85.50	85.74	85.61	62.16	62.33
7. "	widowed or separated	1.12	0.20	0.66	3.15	4.16	3.62	2.13	1.99
8. "	all marital status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
9. 27-above	single	5.11	4.59	4.86	1.77	0.90	1.34	3.01	2.84
10. "	married	84.73	85.94	85.31	63.41	64.75	64.08	75.12	75.59
11. "	widowed or separated	10.16	9.47	9.83	34.82	34.35	34.58	21.27	21.28
12. "	all marital status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13. all ages	single	54.75	54.01	54.39	43.11	41.99	42.57	49.19	48.28
14. "	married	41.02	42.35	41.66	43.89	44.23	44.06	42.39	43.25
15. "	widowed or separated	4.23	3.64	3.95	13.00	13.78	13.37	8.42	8.47
16. "	all marital status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)		(4,082)			(3,697)			(7,779)	



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (7.2.4): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES ALL INDIA  
RURAL AND URBAN ESTIMATED PERSONS

(N88 4th round : 938 villages and 406 urban blocks)

activity status	sample	rural			urban			all India		
		male	female	total	male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>employer</i>										
1.	1	1.16	0.23	0.70	0.41	0.04	0.23	1.03	0.20	0.62
2.	2	1.23	0.38	0.81	0.58	0.05	0.33	1.13	0.33	0.73
3.	combined	1.20	0.31	0.76	0.49	0.04	0.28	1.08	0.26	0.68
<i>employees</i>										
4.	1	18.79	12.06	15.46	28.25	7.10	18.04	20.45	11.22	15.91
5.	2	17.49	11.90	14.74	31.45	11.55	21.87	19.75	11.85	15.87
6.	combined	18.13	11.98	15.10	29.79	9.24	19.98	20.10	11.54	15.89
<i>own account worker and unpaid household labour</i>										
7.	1	39.59	20.61	30.21	23.79	4.64	14.55	36.83	17.92	27.52
8.	2	40.42	22.38	31.53	19.34	7.22	13.51	37.01	20.02	28.66
9.	combined	40.01	21.50	30.88	21.65	5.88	14.05	36.93	18.97	28.09
<i>total employed</i>										
10.	1	59.54	32.90	46.37	52.45	11.78	32.82	58.31	29.34	44.05
11.	2	59.14	34.66	47.08	51.37	18.82	35.70	57.88	32.20	45.26
12.	combined	59.34	33.79	46.74	51.93	15.16	34.21	58.10	30.77	44.66
<i>unemployed seeking employment</i>										
13.	1	0.08	0.07	0.08	0.61	0.14	0.38	0.17	0.08	0.13
14.	2	0.03	0.02	0.02	0.37	0.10	0.24	0.08	0.03	0.06
15.	combined	0.05	0.04	0.05	0.49	0.12	0.31	0.13	0.05	0.09
<i>total labour force</i>										
16.	1	59.62	32.97	46.45	53.06	11.92	33.20	58.48	29.42	44.18
17.	2	59.17	34.68	47.10	51.74	18.92	35.94	57.96	32.23	45.32
18.	combined	59.39	33.83	46.79	52.42	15.28	34.52	58.23	30.82	44.75
<i>total outside labour force</i>										
19.	1	40.38	67.03	53.55	46.94	88.08	66.80	41.52	70.58	55.82
20.	2	40.83	65.32	52.90	48.26	81.08	61.06	42.04	67.77	54.68
21.	combined	40.61	66.17	53.21	47.58	84.72	65.48	41.77	69.18	55.25
<i>all activity status</i>										
22.	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
23.	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
24.	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<i>(number of sample persons)</i>		(21,428)	(20,798)	(42,226)	(9,368)	(8,648)	(18,016)	(30,796)	(29,446)	(60,242)

TABLE (7.3.6): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS

(N88 6th round: 949 villages and 438 urban blocks)

activity status	sample	rural			urban			all-India		
		male	female	total	male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>employer</i>										
1.	1	0.58	0.14	0.36	0.29	0.08	0.19	0.53	0.14	0.34
2.	2	0.89	0.11	0.51	0.61	0.07	0.35	0.85	0.10	0.49
3.	combined	0.74	0.13	0.43	0.44	0.07	0.27	0.69	0.12	0.41
<i>employee</i>										
4.	1	18.22	10.14	14.23	29.25	7.69	19.10	19.95	9.78	14.96
5.	2	16.88	10.80	13.90	31.41	9.43	20.87	18.93	10.61	14.87
6.	combined	17.55	10.47	14.06	30.27	8.53	19.95	19.44	10.20	14.91
<i>own account worker</i>										
7.	1	25.37	3.14	14.38	19.58	2.99	11.77	24.46	3.11	13.98
8.	2	24.72	2.58	13.87	17.12	1.61	9.68	23.65	2.45	13.29
9.	combined	25.04	2.86	14.12	18.41	2.33	10.77	24.05	2.78	13.64
<i>unpaid household labour</i>										
10.	1	14.42	18.92	16.64	4.78	3.13	4.00	12.91	16.63	14.73
11.	2	15.02	20.23	17.57	4.80	5.00	4.90	13.58	18.16	15.81
12.	combined	14.72	19.57	17.11	4.79	4.03	4.43	13.24	17.39	15.27
<i>total employed</i>										
13.	1	58.59	32.34	45.61	53.90	13.89	35.06	57.85	29.66	44.01
14.	2	57.51	33.72	45.85	53.94	16.11	35.80	57.01	31.32	44.46
15.	combined	58.05	33.03	45.72	53.91	14.96	35.42	57.42	30.49	44.23
<i>unemployed seeking employment for the first time</i>										
16.	1	0.83	—	0.42	1.67	0.09	0.92	0.96	0.01	0.50
17.	2	0.71	0.01	0.37	1.89	0.12	1.04	0.87	0.03	0.46
18.	combined	0.77	0.01	0.39	1.77	0.10	0.98	0.92	0.02	0.48
<i>other unemployed seeking employment</i>										
19.	1	0.20	—	0.10	1.16	0.13	0.67	0.35	0.02	0.19
20.	2	0.22	0.03	0.13	1.49	0.13	0.84	0.40	0.04	0.22
21.	combined	0.21	0.01	0.11	1.32	0.13	0.75	0.38	0.03	0.21
<i>total unemployed seeking employment</i>										
22.	1	1.03	—	0.52	2.83	0.22	1.59	1.31	0.03	0.69
23.	2	0.93	0.04	0.50	3.38	0.25	1.88	1.27	0.07	0.68
24.	combined	0.98	0.02	0.50	3.09	0.23	1.73	1.30	0.05	0.69
<i>total labour force</i>										
25.	1	59.62	32.34	46.13	56.73	14.11	36.65	59.16	29.69	44.70
26.	2	58.44	33.76	46.35	57.32	16.36	37.68	58.28	31.39	45.14
27.	combined	59.03	33.05	46.22	57.00	15.19	37.15	58.72	30.54	44.92
<i>family members in domestic work</i>										
28.	1	2.32	30.85	16.42	1.08	46.69	22.55	2.12	33.14	17.34
29.	2	2.02	30.71	16.08	1.22	44.16	21.81	1.91	32.54	16.88
30.	combined	2.17	30.78	16.25	1.15	45.47	22.19	2.01	32.84	17.11
<i>rentiers, pensioners and remittance holders</i>										
31.	1	0.49	0.37	0.43	1.23	0.65	0.96	0.60	0.41	0.51
32.	2	0.72	0.29	0.51	1.09	0.53	0.82	0.78	0.32	0.55
33.	combined	0.61	0.33	0.47	1.17	0.59	0.89	0.69	0.36	0.53
<i>persons living on earnings from ungainful activity</i>										
34.	1	0.51	0.57	0.54	0.57	0.91	0.73	0.52	0.62	0.57
35.	2	0.59	0.73	0.65	0.51	0.63	0.57	0.58	0.71	0.64
36.	combined	0.55	0.65	0.60	0.54	0.78	0.65	0.55	0.67	0.61
<i>others outside labour force</i>										
37.	1	37.06	35.87	36.48	40.39	37.64	39.11	37.60	36.14	36.88
38.	2	38.23	34.51	36.41	39.86	38.32	39.12	38.45	35.04	36.79
39.	combined	37.64	35.19	36.46	40.14	37.97	39.12	38.03	35.59	36.83
<i>all activity status</i>										
40.	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
41.	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
42.	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<i>(number of sample persons)</i>										
(11,717) (11,194) (22,911) (3,938) (3,526) (7,464) (15,655) (14,720) (30,375)										

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (7.3.7): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS

(NSS 7th round: 751 villages and 441 urban blocks)

activity status	sample	rural			urban			all-India		
		male	female	total	male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>employer</i>										
1.	1	0.97	0.31	0.64	0.71	0.07	0.40	0.93	0.27	0.60
2.	2	1.22	0.29	0.76	0.73		0.38	1.14	0.25	0.70
3.	combined	1.09	0.30	0.70	0.72	0.04	0.39	1.03	0.26	0.65
<i>employee</i>										
4.	1	16.11	9.53	12.85	27.60	8.53	18.51	18.11	9.37	13.80
5.	2	15.93	10.76	13.39	28.82	6.86	18.37	18.09	10.14	14.20
6.	combined	16.02	10.13	13.11	28.18	7.73	18.44	18.10	9.74	14.00
<i>own account worker</i>										
7.	1	30.26	5.11	17.78	19.80	2.27	11.44	28.44	4.65	16.71
8.	2	29.08	5.72	17.59	19.10	3.29	11.57	27.41	5.33	16.61
9.	combined	29.68	5.41	17.69	19.47	2.76	11.51	27.93	4.98	16.67
<i>unpaid household labour</i>										
10.	1	11.75	15.68	13.70	3.29	3.91	3.59	10.28	13.76	12.00
11.	2	12.19	15.54	13.84	3.49	4.12	3.79	10.73	13.73	12.20
12.	combined	11.97	15.62	13.77	3.39	4.01	3.68	10.50	13.75	12.10
<i>total employed</i>										
13.	1	59.09	30.63	44.97	51.40	14.78	33.94	57.76	28.05	43.11
14.	2	58.42	32.31	45.58	52.14	14.27	34.11	57.37	29.45	43.71
15.	combined	58.76	31.46	45.27	51.76	14.54	34.02	57.56	28.73	43.42
<i>unemployed seeking employment for the first time</i>										
16.	1	0.19	0.03	0.11	1.06	0.18	0.64	0.34	0.06	0.20
17.	2	0.16	0.05	0.11	1.01	0.05	0.55	0.30	0.05	0.18
18.	combined	0.17	0.04	0.11	1.04	0.12	0.60	0.32	0.05	0.19
<i>other unemployed seeking employment</i>										
19.	1	0.13	0.04	0.09	1.16	0.23	0.72	0.31	0.07	0.19
20.	2	0.16	0.05	0.11	1.17	0.17	0.69	0.33	0.07	0.20
21.	combined	0.15	0.04	0.10	1.16	0.20	0.71	0.32	0.07	0.20
<i>total unemployed seeking employment</i>										
22.	1	0.32	0.07	0.20	2.22	0.41	1.36	0.65	0.13	0.39
23.	2	0.32	0.10	0.22	2.18	0.22	1.24	0.63	0.12	0.38
24.	combined	0.32	0.08	0.21	2.20	0.32	1.31	0.64	0.12	0.39
<i>total labour force</i>										
25.	1	59.41	30.70	45.17	53.62	15.19	35.30	58.41	28.18	43.50
26.	2	58.74	32.41	45.80	54.32	14.49	35.35	58.00	29.57	44.09
27.	combined	59.08	31.54	45.48	53.96	14.86	35.33	58.20	28.85	43.81
<i>family members in domestic work</i>										
28.	1	0.78	27.99	14.28	1.28	41.03	20.23	0.86	30.12	15.28
29.	2	0.64	27.36	13.78	0.91	44.84	21.82	0.68	30.13	15.09
30.	combined	0.71	27.68	14.03	1.10	42.85	20.99	0.77	30.12	15.19
<i>rentiers, pensioners and remittance holders</i>										
31.	1	0.31	0.58	0.44	0.98	1.26	1.11	0.43	0.69	0.56
32.	2	0.40	0.76	0.58	1.40	0.97	1.20	0.57	0.79	0.68
33.	combined	0.35	0.67	0.51	1.18	1.12	1.15	0.50	0.74	0.62
<i>persons living on earnings from ungainful activity</i>										
34.	1	0.42	0.35	0.38	0.48	0.23	0.36	0.43	0.33	0.38
35.	2	0.38	0.26	0.32	0.23	0.37	0.30	0.35	0.28	0.32
36.	combined	0.40	0.31	0.35	0.36	0.30	0.33	0.39	0.31	0.35
<i>others outside labour force</i>										
37.	1	39.08	40.38	39.73	43.64	42.29	43.00	39.87	40.68	40.28
38.	2	39.84	39.21	39.52	43.14	39.33	41.33	40.40	39.23	39.82
39.	combined	39.46	39.80	39.63	43.40	40.87	42.20	40.14	39.98	40.03
<i>all activity status</i>										
40.	1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
41.	2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
42.	combined	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)		(20,930)	(20,468)	(41,398)	(4,082)	(3,697)	(7,779)	(25,012)	(24,165)	(49,177)



TABLE (7.4.6): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA RURAL AND URBAN ESTIMATED MALES

(NSS 6th round : 949 villages and 438 urban blocks)														
activity status	rural zone					urban size class								
	north	east	south	west	central	north- west	all-India rural	all-India urban	below 15,000	15,000- 50,000	50,000- 100,000	100,000- above	all- India	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. employer	0.53	0.91	0.64	1.19	0.99	—	0.74	0.44	0.56	0.13	0.12	0.75	0.54	0.69
2. employee	11.39	20.51	24.36	14.04	18.58	9.89	17.55	30.27	25.79	26.36	30.25	32.10	41.30	19.44
3. own account worker	29.95	23.86	20.55	23.47	25.62	27.89	25.04	18.41	20.36	21.23	17.99	16.93	13.18	24.05
4. unpaid household labour	15.67	13.98	10.92	16.63	15.86	18.66	14.72	4.79	6.36	5.00	4.69	3.88	3.36	13.24
5. total employed	57.54	59.26	56.47	55.33	61.05	56.44	58.05	53.91	53.07	52.72	53.05	53.06	58.38	57.42
6. unemployed seeking employment for the first time	0.71	0.66	1.48	0.18	0.44	0.89	0.77	1.77	0.99	1.40	2.04	1.42	4.01	0.92
7. other unemployed seeking employment	0.16	0.16	0.55	0.04	0.06	0.20	0.21	1.32	0.53	1.27	1.13	1.34	2.79	0.38
8. total unemployed seeking employment	0.87	0.82	2.03	0.22	0.50	1.09	0.98	3.09	1.52	2.67	3.17	2.76	6.80	1.30
9. total labour force	58.41	60.08	58.50	55.55	61.55	57.53	59.03	57.00	54.59	55.39	56.22	56.42	65.18	58.72
10. family members in domestic work	3.36	1.68	2.84	0.95	1.58	1.93	2.17	1.15	1.50	1.52	1.03	0.88	0.45	2.01
11. rentiers, pensioners and remittance holders	0.39	0.28	0.66	0.77	1.00	1.00	0.61	1.17	1.00	0.83	1.31	1.53	1.31	0.69
12. persons living on earnings from unganful activity others outside	0.26	0.66	0.59	0.65	0.34	1.00	0.55	0.54	0.61	0.35	1.07	0.59	0.25	0.55
13. labour force	37.58	37.30	37.41	42.08	35.53	38.54	37.64	40.14	42.30	41.91	40.37	40.58	32.81	38.03
14. all activity status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)	(1,854)	(2,961)	(2,018)	(1,673)	(1,739)	(1,472)	(11,717)	(3,938)	(653)	(696)	(583)	(1,002)	(1,001)	(15,655)

TABLE (7.4.6)2: PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA RURAL AND URBAN ESTIMATED FEMALES

(NSS 6th round : 949 villages and 438 urban blocks)

activity status	rural zone						urban size class								all-India
	north	east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000 < 50,000	50,000 < 100,000	100,000 & above	all-India		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1. employer	0.25	0.06	0.20	0.14	0.07		0.13	0.07		0.29		7.88	4.01	0.12	
2. employee	4.27	8.87	17.65	9.87	15.62	3.48	10.47	8.53	11.70	10.38	3.94	7.88	4.01	10.20	
3. own account worker	3.59	4.10	2.13	1.45	2.31	1.50	2.86	2.33	1.41	4.57	1.80	1.95	0.88	2.78	
4. unpaid household labour	19.49	15.44	12.30	30.69	26.24	26.83	19.57	4.03	6.70	5.24	4.80	1.48	0.34	17.39	
5. total employed	27.60	28.47	32.28	42.15	44.24	31.81	33.03	14.96	19.81	20.48	10.54	11.31	5.23	30.49	
6. unemployed seeking employment for the first time	—	0.02	—	—	—	—	0.01	0.10	—	0.13	—	0.24	—	0.02	
7. other unemployed seeking employment	—	—	—	0.04	0.07	—	0.01	0.13	0.16	—	0.31	0.10	0.19	0.03	
8. total unemployed seeking employment	—	0.02	—	0.04	0.07	—	0.02	0.23	0.16	0.18	0.31	0.34	0.19	0.05	
9. total labour force	27.60	28.49	32.28	42.19	44.31	31.81	33.05	15.19	19.97	20.66	10.85	11.65	5.42	30.54	
10. family members in domestic work	36.43	35.03	30.30	18.26	23.07	32.57	30.78	45.47	36.99	44.72	53.08	48.36	51.48	72.84	
11. rentiers, pensioners and remittance holders	0.14	0.20	0.43	0.85	0.25	0.47	0.33	0.59	0.91	0.62	0.17	0.39	0.28	0.36	
12. persons living on earnings from unskilled activities	0.48	0.74	0.91	0.95	0.25	0.50	0.65	0.78	0.54	0.40	1.31	1.35	0.09	0.67	
13. others outside labour force	35.35	35.54	35.99	37.75	32.12	34.65	35.19	37.97	41.59	33.60	34.59	37.85	42.73	72.59	
14. all activity status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
(number of sample persons)	(1,762)	(2,900)	(2,069)	(1,584)	(1,618)	(1,261)	(11,194)	(3,326)	(6,38)	(6,37)	(505)	(54)	(80)	(14,700)	

TABLE (7.4.63): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS  
(NSS 6th round: 949 villages and 438 urban blocks)

activity status	rural zone						urban size class								all-India
	north	east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000-50,000	50,000-100,000	100,000-above	ratio		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1. employer	0.39	0.49	0.41	0.68	0.55	—	0.43	0.27	0.29	0.21	0.06	0.39	0.30	0.41	
2. employee	7.90	14.72	20.91	12.00	17.16	6.93	14.06	19.95	18.93	18.67	17.93	20.50	24.85	14.91	
3. own account worker	17.04	14.04	11.09	12.68	14.46	15.68	14.12	10.77	11.13	13.21	10.40	9.76	7.55	13.64	
4. unpaid household labour	17.54	14.70	11.63	23.52	20.83	22.44	17.11	4.43	6.52	5.11	4.74	2.73	2.03	15.27	
5. total employed	42.87	43.95	44.04	48.88	53.00	45.05	45.72	35.42	36.87	37.20	33.13	33.38	34.93	41.23	
6. unemployed seeking employment for the first time	0.36	0.34	0.72	0.09	0.23	0.48	0.39	0.98	0.51	0.81	1.08	0.86	2.24	0.48	
7. other unemployed seeking employment	0.08	0.08	0.27	0.04	0.07	0.11	0.11	0.75	0.35	0.66	0.74	0.75	1.64	0.21	
8. total unemployed seeking employment	0.44	0.42	0.99	0.13	0.30	0.59	0.50	1.73	0.86	1.47	1.82	1.61	3.88	0.69	
9. total labour force	43.31	44.37	45.03	49.01	53.30	45.64	46.22	37.15	37.73	38.67	34.95	34.99	38.81	44.92	
10. family members in domestic work	19.56	18.26	16.99	9.43	11.87	16.11	16.25	22.19	18.79	22.30	25.41	23.61	22.95	17.11	
11. rentiers, pensioners and remittance holders	0.27	0.24	0.54	0.81	0.64	0.76	0.47	0.89	0.96	0.73	0.78	1.08	0.86	0.53	
12. persons living on earnings from unskilled activities	0.37	0.69	0.75	0.80	0.30	0.77	0.60	0.65	0.58	0.38	1.18	1.05	0.18	0.61	
13. others outside labour force	36.49	36.44	36.69	39.95	33.89	36.72	36.46	39.12	41.94	37.92	37.68	39.27	37.20	36.83	
14. all activity status (number of sample persons)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
	(3,616)	(5,861)	(4,087)	(3,257)	(3,357)	(2,733)	(22,911)	(7,464)	(1,291)	(1,333)	(1,088)	(1,947)	(1,805)	(30,375)	



TABLE (7.4.7): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA RURAL AND URBAN ESTIMATED MALES

(NSS 7th round: 951 villages and 441 urban blocks)

activity status	rural zone							urban size class							all-India
	north			west		central	north-west	all-India	below 15,000	15,000-50,000	50,000-100,000	100,000-above	all-India		
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1. employer	0.87	0.72	1.20	2.04	1.94	0.06	1.09	0.72	0.54	0.86	0.34	0.89	0.85	1.03	
2. employee	8.25	18.65	22.87	14.38	20.82	6.50	16.02	28.18	23.10	27.61	31.23	26.00	40.61	18.10	
3. own account worker	33.61	28.12	27.49	26.12	28.90	34.22	29.68	19.47	22.42	20.08	16.69	20.37	13.31	27.93	
4. unpaid household labour	14.82	10.97	6.60	15.35	11.54	16.21	11.97	3.39	6.77	2.42	3.30	2.11	0.82	10.50	
5. total employed	57.55	58.46	58.16	57.89	63.20	56.99	58.76	51.76	52.83	50.97	51.56	49.37	55.59	57.56	
6. unemployed seeking employment for the first time	0.08	0.23	0.43	0.20	—	—	0.17	1.04	0.40	1.01	1.28	1.20	1.83	0.32	
7. other unemployed seeking employment	0.06	0.25	0.23	0.10	0.04	0.12	0.15	1.16	0.62	0.74	2.08	1.29	2.01	0.32	
8. total unemployed seeking employment	0.14	0.48	0.66	0.30	0.04	0.12	0.32	2.20	1.02	1.75	3.36	2.49	3.84	0.64	
9. total labour force	57.69	58.94	58.82	58.19	63.24	57.11	59.08	53.96	53.85	52.72	54.92	51.86	59.43	58.20	
10. family members in domestic work	1.02	0.93	0.96	0.07	0.23	0.39	0.71	1.10	0.88	0.64	1.25	1.16	2.19	0.77	
11. rentiers, pensioners and remittance holders	0.07	0.16	0.67	0.27	0.64	0.41	0.35	1.18	1.13	0.73	1.36	1.37	1.62	0.50	
12. persons living on earnings from ungainful activities	0.18	0.43	0.48	0.27	0.42	0.69	0.40	0.36	0.59	0.23	0.63	0.14	0.26	0.39	
13. others outside labour force	41.04	39.54	39.07	41.20	35.47	41.40	39.46	43.40	43.55	45.68	41.84	54.47	36.50	40.14	
14. all activity status (number of sample persons)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
	(3,714)	(5,052)	(5,278)	(3,107)	(2,816)	(2,822)	(29,930)	(4,082)	(799)	(781)	(774)	(1,100)	793	(2,612)	

TABLE (7.4.7)2: PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA RURAL AND URBAN ESTIMATED FEMALES

(NSS 7th round: 931 villages and 441 urban blocks)

activity status	rural zone						urban size class								all-India
	north		east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000-50,000	50,000-100,000	100,000-above	cities	
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1. employer	0.30	0.15	0.21	0.59	0.49	0.24	0.30	0.04	—	—	—	0.16	—	0.26	
2. employee	4.15	7.68	16.92	11.51	17.21	2.24	10.13	7.73	11.45	7.48	6.97	4.92	6.11	9.74	
3. own account worker	4.99	6.65	7.90	2.43	3.45	4.43	5.41	2.76	4.10	2.73	3.01	1.99	0.96	4.98	
4. unpaid household labour	14.69	11.04	7.49	25.82	24.40	20.65	15.62	4.01	8.03	3.35	3.90	1.33	1.62	13.75	
5. total employed	24.13	25.52	32.52	39.99	45.55	27.56	31.46	14.54	23.58	13.56	13.88	8.40	8.69	28.73	
6. unemployed seeking employment for the first time	0.07	—	0.15	—	—	—	0.04	0.12	0.14	—	—	0.28	0.10	0.05	
7. other unemployed seeking employment	—	0.10	0.10	—	—	—	0.04	0.20	0.26	0.39	—	—	0.26	0.07	
8. total unemployed seeking employment	0.07	0.10	0.25	—	—	—	0.08	0.32	0.40	0.39	—	0.28	0.36	0.12	
9. total labour force	24.20	25.62	32.77	39.99	45.55	27.56	31.54	14.86	23.98	13.95	13.88	8.68	0.05	28.85	
10. family members in domestic work	35.02	32.85	26.24	17.06	16.39	31.89	27.68	42.85	36.83	42.45	46.63	46.80	45.97	30.12	
11. rentiers, pensioners and remittance holders	0.28	0.46	1.15	0.90	0.94	0.34	0.67	1.12	2.10	0.62	0.79	1.21	0.10	0.74	
12. persons living on earnings from unskilled activities	0.18	0.52	0.32	0.15	0.27	0.23	0.31	0.30	0.27	0.53	—	0.36	—	0.31	
13. others outside labour force	40.32	40.55	39.52	41.90	36.85	39.98	39.80	40.87	36.82	42.45	38.70	42.95	44.88	39.98	
14. all activity status (number of sample persons)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
	(3,591)	(4,954)	(3,375)	(2,946)	(3,037)	(2,565)	(20,468)	(3,697)	(722)	(750)	(599)	(1,071)	(615)	(24,165)	

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (7.4.7/3): PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS IN THE RURAL POPULATION ZONES AND THE URBAN POPULATION SIZE CLASSES OF TOWNS: ALL-INDIA RURAL AND URBAN ESTIMATED PERSONS

(NSS 7th round : 951 villages and 441 urban blocks)														
activity status	rural zone					urban size class								
	north	east	south	west	central	north-west	all-India rural	all-India urban	below 15,000	15,000-50,000	50,000-100,000	100,000-above	cities	all India
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. employer	0.59	0.44	0.70	1.30	1.22	0.14	0.70	0.39	0.28	0.44	0.18	0.54	0.48	0.65
2. employee	6.23	13.27	19.90	12.72	19.04	4.47	13.11	18.44	17.46	17.79	19.77	15.92	25.51	14.00
3. own account worker	19.56	17.59	17.66	14.00	16.33	20.01	17.69	11.51	13.55	11.62	10.22	11.59	7.90	16.67
4. unpaid household labour	14.77	11.00	7.04	20.70	17.89	18.33	13.77	3.68	7.38	2.87	3.58	1.74	1.17	12.10
5. total employed	41.15	42.30	45.30	48.72	54.48	42.95	45.27	34.02	38.67	32.72	33.75	29.79	35.06	43.42
6. unemployed seeking employment for the first time	0.08	0.12	0.29	0.10	—	—	0.11	0.60	0.27	0.52	0.67	0.76	1.07	0.19
7. other unemployed seeking employment	0.03	0.18	0.17	0.05	0.02	0.07	0.10	0.71	0.45	0.57	1.09	0.67	1.24	0.20
8. total unemployed seeking employment	0.11	0.30	0.46	0.15	0.02	0.07	0.21	1.31	0.72	1.09	1.76	1.43	2.31	0.39
9. total labour force	41.26	42.60	45.76	48.87	54.50	43.02	45.48	35.33	39.39	33.81	35.51	31.22	37.37	43.81
10. family members in domestic work	17.70	16.59	13.63	8.77	8.21	15.42	14.03	29.99	18.28	21.03	22.71	22.97	21.37	15.19
11. rentiers, pensioners and remittance holders	0.17	0.31	0.91	0.59	0.79	0.38	0.51	1.15	1.60	0.67	1.09	1.29	0.95	0.62
12. persons living on earnings from unskilled activities	0.18	0.47	0.40	0.21	0.35	0.47	0.35	0.33	0.44	0.38	0.33	0.25	0.14	0.35
13. others outside labour force	40.69	40.03	39.30	41.56	36.15	40.71	39.63	42.20	40.29	44.11	40.36	44.27	40.17	40.03
14. all activity status	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample persons)	(7,365)	(10,000)	(6,755)	(5,702)	(6,144)	(5,298)	(41,208)	(7,779)	(1,491)	(1,571)	(1,988)	(2,271)	(1,445)	(49,175)



TABLE 7 : 21. PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE TO TOTAL POPULATION IN AGE GROUPS BY SEX: ALL-INDIA RURAL ESTIMATED PERSONS

(NSS 6th round: 949 villages;

NSS 7th round: 951 villages)

age group years	male		female		total	
	percentage of population	percentage of population in labour force	percentage of population	percentage of population in labour force	percentage of population	percentage of population in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. 0 - 6	21.80	0.06	20.85	0.02	21.33	0.04
2. 7 - 11	12.96	1.72	13.22	0.02	13.09	1.32
3. 12 - 16	11.20	6.73	10.66	3.90	10.94	5.34
4. 17 - 21	8.30	7.61	9.52	4.58	8.90	6.12
5. 22 - 26	9.00	8.81	9.42	4.98	9.21	6.92
6. 27 - 31	7.10	6.96	7.37	4.21	7.23	5.60
7. 32 - 36	7.22	7.06	6.21	3.52	6.72	5.36
8. 37 - 41	5.36	5.22	5.50	3.30	5.43	4.27
9. 42 - 46	4.53	4.40	4.21	2.38	4.37	3.40
10. 47 - 51	3.72	3.54	3.63	1.80	3.68	2.68
11. 52 - 56	3.07	2.79	3.11	1.27	3.09	2.04
12. 57 - 61	2.57	2.17	2.68	0.79	2.62	1.49
13. 62 - 66	1.36	1.06	1.42	0.28	1.39	0.68
14. 67 - above	1.81	0.92	2.20	0.27	2.00	0.60
15. all ages	100.00	59.05	100.00	32.32	100.00	45.86
(number of sample persons	(32,647)		(31,662)		(64,309)	

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 7.7.22: PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE TO TOTAL POPULATION IN AGE GROUPS BY SEX - ALL INDIA  
URBAN ESTIMATED PERSONS

(NSS 6th round: 438 urban blocks;  
NSS 7th round: 441 urban blocks)

age group (years)	male		female		total	
	percentage of population	percentage of population in labour force	percentage of population	percentage of population in labour force	percentage of population	percentage of population in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. 0 - 6	18.69	0.01	19.28	—	18.97	0.01
2. 7 - 11	11.08	0.47	3.68	0.25	11.84	0.36
3. 12 - 16	11.66	3.45	11.50	1.31	11.59	2.43
4. 17 - 21	9.89	6.87	9.79	1.53	9.84	4.33
5. 22 - 26	10.31	9.61	10.18	2.32	10.25	6.14
6. 27 - 31	7.85	7.72	7.49	1.82	7.70	4.92
7. 32 - 36	7.39	7.23	6.58	1.85	7.00	4.67
8. 37 - 41	5.59	5.38	6.04	2.01	5.80	3.78
9. 42 - 46	5.40	5.05	4.06	1.33	4.65	3.28
10. 47 - 51	3.75	3.47	3.56	0.96	3.66	3.28
11. 52 - 56	2.84	2.46	3.00	0.67	2.92	1.61
12. 57 - 61	2.47	2.01	2.35	0.47	2.41	1.27
13. 62 - 66	1.15	0.69	1.52	0.33	1.33	0.52
14. 67 - above	2.10	0.99	1.97	0.17	2.04	0.60
15. all ages	100.00	55.41	100.00	15.02	100.00	36.20
(number of sample persons)	(8,020)		(7,223)		(15,243)	

TABLE 7.7.2.3 PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE TO TOTAL POPULATION IN AGE GROUPS BY SEX:  
ALL-INDIA ESTIMATED PERSONS

(NSS 6th round : 949 villages and 438 urban blocks;

NSS 7th round : 951 villages and 441 urban blocks)

age group (years)	male		female		total	
	percentage of population	percentage of population in labour force	percentage of population	percentage of population in labour force	percentage of population	percentage of population in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. 0 - 6	21.30	0.05	20.62	0.02	20.96	0.04
2. 7 - 11	12.65	1.52	13.14	0.82	12.89	1.17
3. 12 - 16	11.27	6.21	10.79	3.51	11.04	4.89
4. 17 - 21	8.55	7.49	9.56	4.12	9.05	5.85
5. 22 - 26	9.21	8.94	9.53	4.58	9.37	6.81
6. 27 - 31	7.23	7.08	7.39	3.85	7.30	5.50
7. 32 - 36	7.25	7.08	6.26	3.35	6.76	5.25
8. 37 - 41	5.40	5.25	5.58	3.10	5.49	4.20
9. 42 - 46	4.64	4.51	4.19	2.22	4.42	3.38
10. 47 - 51	3.73	3.52	3.62	1.67	3.67	2.62
11. 52 - 56	3.03	2.74	3.09	1.18	3.07	1.97
12. 57 - 61	2.55	2.15	2.63	0.74	2.59	1.46
13. 62 - 66	1.33	1.00	1.44	0.29	1.38	0.65
14. 67 - above	1.86	0.93	2.16	0.26	2.01	0.59
15. all ages	100.00	58.47	100.00	29.71	100.00	44.38
(number of sample persons)	(40,667)		(38,885)		(79,552)	



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (7.7.61): PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE, AND PROPORTION IN LABOUR FORCE IN AGE GROUPS BY SEX FROM TWO INDEPENDENT SAMPLES: ALL INDIA RURAL ESTIMATED PERSONS

(NBS 6th round: 949 villages)

age group (years)	sample	male			female			total		
		percent age of popula- tion	percent age of labour force	percent age of popula- tion in labour force	percent age of popula- tion	percent age of labour force	percent age of popula- tion in labour force	percent age of popula- tion	percent age of labour force	percent age of popula- tion in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 14	1	41.81	10.37	14.78	41.47	9.64	7.53	41.64	10.11	11.30
2. "	2	42.21	9.39	13.00	39.35	10.48	8.99	40.81	9.75	11.10
3. "	combined	42.01	9.88	13.88	40.41	10.07	8.23	41.22	9.95	11.15
4. 15 - 19	1	9.65	12.73	78.65	10.28	13.78	43.33	9.96	13.09	60.63
5. "	2	8.80	12.15	80.65	10.40	14.47	46.97	9.58	12.98	62.74
6. "	combined	9.22	12.44	79.61	10.34	14.13	45.16	9.77	13.03	61.67
7. 20 - 24	1	9.43	15.24	96.32	9.68	15.62	52.17	9.55	15.37	74.21
8. "	2	8.71	14.49	97.14	9.94	15.13	51.38	9.32	14.72	73.20
9. "	combined	9.07	14.86	96.72	9.81	15.37	51.77	9.43	15.04	73.71
10. 25 - 34	1	14.67	24.15	98.13	14.10	25.53	58.55	14.39	24.63	78.96
11. "	2	14.93	25.07	98.09	15.27	25.12	55.52	15.10	25.08	76.98
12. "	combined	14.80	24.60	98.11	14.68	25.32	56.98	14.75	24.86	77.94
13. 35 - 44	1	10.56	17.26	97.49	10.83	19.99	59.72	10.69	18.21	78.58
14. "	2	11.15	18.63	97.66	10.29	18.65	61.18	10.72	18.64	80.51
15. "	combined	10.85	17.95	97.58	10.56	19.31	60.43	10.71	18.43	79.56
16. 45 - 64	1	11.90	18.15	90.95	11.33	14.30	40.81	11.62	16.82	66.77
17. "	2	11.89	18.42	90.51	12.19	14.83	41.06	12.04	17.14	65.96
18. "	combined	11.90	18.29	90.73	11.76	14.57	40.94	11.83	16.98	66.36
19. 65-above	1	1.98	2.10	63.01	2.31	1.14	15.92	2.15	1.77	37.92
20. "	2	2.31	1.85	46.92	2.56	1.32	17.38	2.43	1.66	21.66
21. "	combined	2.15	1.98	54.30	2.44	1.23	16.69	2.29	1.71	34.59
22. all ages	1	100.00	100.00	59.61	100.00	100.00	32.34	100.00	100.00	46.13
23. "	2	100.00	100.00	58.43	100.00	100.00	33.75	100.00	100.00	46.33
24. "	combined	100.00	100.00	59.03	100.00	100.00	33.05	100.00	100.00	46.22
(number of sample persons)		(11,717)			(11,194)			(22,911)		

TABLE 7 : 62 PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE, AND PROPORTION IN LABOUR FORCE IN AGE GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES - ALL-INDIA URBAN ESTIMATED PERSONS

(NSS 6th round : 438 urban blocks)

age group (years)	sample	male			female			total		
		percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 14	1	38.62	5.00	7.47	38.61	6.17	2.26	38.61	5.28	5.02
2. ..	2	35.67	4.35	7.00	39.16	6.46	2.70	37.35	4.79	4.84
3. ..	combined	37.22	4.74	7.26	38.87	6.32	2.47	38.01	5.05	4.93
4. 15 - 19	1	9.97	10.46	59.53	11.11	8.58	10.90	10.51	10.12	35.32
5. ..	2	10.26	10.16	56.77	10.05	10.31	16.79	10.16	10.19	37.81
6. ..	combined	10.10	10.32	58.21	10.60	9.48	13.59	10.34	10.15	36.49
7. 20 - 24	1	10.58	17.13	91.88	9.98	13.40	18.95	10.29	16.46	58.61
8. ..	2	10.84	16.43	86.83	10.17	12.91	20.79	10.52	15.70	56.23
9. ..	combined	10.70	16.80	89.46	10.07	13.15	19.85	10.40	16.09	57.46
10. 25 - 34	1	15.89	27.40	97.79	15.30	25.41	23.44	15.61	27.04	63.49
11. ..	2	15.72	26.78	97.60	15.57	24.58	25.83	15.65	26.32	63.37
12. ..	combined	15.82	27.10	97.70	15.43	24.98	24.60	15.63	26.68	63.43
13. 35 - 44	1	10.87	18.67	97.41	10.84	21.99	28.61	10.86	19.27	65.08
14. ..	2	12.58	21.26	96.82	11.98	28.97	39.57	12.29	22.87	70.08
15. ..	combined	11.69	19.90	97.11	11.39	25.60	34.16	11.54	21.01	68.46
16. 45 - 64	1	11.93	18.73	89.09	11.52	21.76	26.65	11.74	19.28	60.23
17. ..	2	12.66	19.12	86.55	11.03	15.78	23.42	11.88	18.42	58.45
18. ..	combined	12.27	18.91	87.85	11.29	18.66	25.13	11.81	18.87	59.38
19. 65-above	1	2.14	2.52	66.56	2.64	2.69	14.37	2.38	2.55	39.28
20. ..	2	2.27	1.90	48.10	2.04	0.99	7.93	2.15	1.71	29.92
21. ..	combined	2.20	2.23	57.78	2.35	1.81	11.69	2.27	2.15	35.05
22. all ages	1	100.00	100.00	56.72	100.00	100.00	14.11	100.00	100.00	36.67
23. ..	2	100.00	100.00	57.30	100.00	100.00	16.37	100.00	100.00	37.68
24. ..	combined	100.00	100.00	57.00	100.00	100.00	15.19	100.00	100.00	37.15
(number of sample persons)		(3,938)			(3,526)			(7,464)		

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (7.7 6)3. PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE AND PROPORTION IN LABOUR FORCE IN AGE GROUPS BY SEX FROM TWO INDEPENDENT SAMPLES: ALL-INDIA ESTIMATED PERSONS

(NSS 6th round : 949 villages and 438 urban blocks)

age group (years)	sample	male			female			total		
		percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 14	1	41.31	9.57	13.71	41.05	9.40	6.80	41.18	9.52	10.33
2. "	2	41.29	8.69	12.27	39.34	10.20	8.14	40.34	9.20	10.30
3. "	combined	41.30	9.13	12.99	40.20	9.81	7.45	40.76	9.36	10.31
4. 15 - 19	1	9.70	12.39	75.57	10.40	13.41	38.31	10.04	12.72	56.63
5. "	2	9.01	11.87	76.81	10.35	14.17	42.99	9.66	12.66	59.11
6. "	combined	9.35	12.13	76.17	10.37	13.80	40.63	9.85	12.69	57.84
7. 20 - 24	1	9.61	15.52	95.55	9.72	15.46	47.24	9.67	15.50	71.70
8. "	2	9.01	14.76	95.39	9.97	14.98	47.13	9.48	14.83	70.59
9. "	combined	9.31	15.14	95.47	9.85	15.21	47.18	9.57	15.17	71.15
10. 25 - 34	1	14.86	24.64	98.08	14.28	25.53	53.10	14.57	24.94	76.46
11. "	2	15.04	25.30	98.02	15.31	25.08	51.41	15.17	25.23	75.03
12. "	combined	14.95	24.98	98.05	14.79	25.30	52.23	14.87	25.08	75.73
13. 35 - 44	1	10.61	17.46	97.48	10.83	20.13	55.20	10.72	18.34	76.51
14. "	2	11.35	19.00	97.53	10.51	19.38	57.83	10.94	19.13	78.89
15. "	combined	10.98	18.23	97.51	10.67	19.75	56.49	10.83	18.73	77.71
16. 45 - 54	1	11.90	18.24	90.66	11.36	14.82	38.73	11.64	17.12	65.78
17. "	2	12.00	18.52	89.92	12.03	14.90	38.86	12.02	17.29	64.93
18. "	combined	11.95	18.38	90.29	11.69	14.86	38.80	11.83	17.21	65.35
19. 65-above	1	2.01	2.16	63.61	2.36	1.25	15.67	2.18	1.86	38.14
20. "	2	2.30	1.86	47.08	2.49	1.29	16.33	2.39	1.66	31.45
21. "	combined	2.16	2.01	54.80	2.43	1.27	16.01	2.29	1.76	34.65
22. all ages	1	100.00	100.00	59.16	100.00	100.00	29.70	100.00	100.00	44.70
23. "	2	100.00	100.00	58.27	100.00	100.00	31.39	100.00	100.00	45.13
24. "	combined	100.00	100.00	58.72	100.00	100.00	30.54	100.00	100.00	44.92
(number of sample persons)		(15,655)			(14,720)			(30,375)		



TABLE 7.7.51 PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE, AND PROPORTION IN LABOUR FORCE IN AGE GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL ESTIMATED PERSONS

(NSS 7th round: 951 villages)

age group (years)	sample	male			female			total		
		percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 14	1	41.28	9.40	13.53	41.12	9.54	7.12	41.20	9.45	10.35
2. "	2	41.97	9.49	13.28	40.51	9.90	7.92	41.25	9.63	10.70
3. "	combined	41.62	9.44	13.41	40.82	9.72	7.51	41.23	9.54	10.52
4. 15 - 19	1	9.01	12.00	79.67	9.22	12.01	40.03	9.11	12.06	59.77
5. "	2	8.61	11.91	81.29	9.46	13.29	45.57	9.02	12.39	62.88
6. "	combined	8.81	12.00	80.45	9.33	12.66	42.77	9.07	12.22	61.29
7. 20 - 24	1	8.94	14.44	96.00	9.63	15.90	50.71	9.28	14.94	72.68
8. "	2	9.06	14.75	95.64	9.50	14.85	50.65	9.28	14.78	72.98
9. "	combined	9.00	14.59	95.82	9.57	15.37	50.68	9.28	14.86	72.33
10. 25 - 34	1	15.55	25.52	97.48	14.90	26.75	55.13	15.23	25.93	76.92
11. "	2	14.99	24.99	97.89	14.53	25.64	57.20	14.77	25.21	78.20
12. "	combined	15.28	25.26	97.68	14.72	26.19	56.13	15.00	25.58	77.54
13. 35 - 44	1	11.11	18.14	97.05	10.31	19.31	57.46	10.71	18.53	78.13
14. "	2	10.54	17.51	97.58	10.91	19.31	57.34	10.73	18.14	77.44
15. "	combined	10.83	17.83	97.30	10.61	19.30	57.40	10.72	18.34	77.79
16. 45 - 64	1	11.95	18.43	91.65	12.06	15.61	39.75	12.01	17.48	65.77
17. "	2	12.42	19.09	90.31	12.24	16.38	43.41	12.33	18.15	67.41
18. "	combined	12.18	18.76	90.97	12.15	16.00	41.55	12.16	17.81	66.59
19. 65-above	1	2.16	1.98	54.35	2.76	0.88	9.81	2.46	1.61	29.54
20. "	2	2.41	2.26	55.31	2.85	0.63	7.22	2.62	1.70	29.64
21. "	combined	2.28	2.12	54.85	2.80	0.76	8.53	2.54	1.65	29.59
22. all ages	1	100.00	100.00	59.41	100.00	100.00	30.70	100.00	100.00	45.17
23. "	2	100.00	100.00	58.75	100.00	100.00	32.42	100.00	100.00	45.80
24. "	combined	100.00	100.00	59.08	100.00	100.00	31.54	100.00	100.00	45.48
(number of sample persons)		(20,930)			(20,468)			(41,398)		

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 7.7.2 PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE  
AND PROPORTION IN LABOUR FORCE IN AGE GROUPS BY SEX FROM TWO  
INDEPENDENT SAMPLES: ALL-INDIA URBAN ESTIMATED PERSONS

(NSS 7th round: 441 urban blocks)

age group (years)	sample	male			female			total		
		percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 14	1	37.34	2.88	4.14	39.82	7.93	3.03	38.47	3.91	3.59
2. "	2	36.23	3.20	4.80	38.64	6.17	2.31	37.39	3.78	3.57
3. "	combined	36.75	3.03	4.45	39.26	7.11	2.69	37.95	3.85	3.58
4. 15 - 19	1	10.74	10.31	51.49	10.05	11.43	17.34	10.41	10.55	35.78
5. "	2	10.34	9.32	48.98	9.69	5.89	8.82	10.03	8.66	30.51
6. "	combined	10.55	9.83	50.31	9.88	8.66	13.23	10.23	9.64	33.29
7. 20 - 24	1	9.24	14.08	81.68	11.12	15.71	21.47	10.14	14.41	50.19
8. "	2	11.41	17.88	85.09	10.20	15.30	21.72	10.84	17.37	56.60
9. "	combined	10.29	15.92	83.50	10.68	15.52	21.59	10.47	15.84	53.43
10. 25 - 34	1	17.75	32.27	97.53	15.12	24.78	24.89	16.49	30.73	65.78
11. "	2	15.92	28.05	95.70	15.03	26.02	25.13	15.50	27.66	63.11
12. "	combined	16.87	30.23	96.70	15.08	25.38	25.01	16.02	29.26	64.54
13. 35 - 44	1	11.63	20.65	95.17	10.51	21.52	31.11	11.10	20.83	66.24
14. "	2	11.01	19.81	97.75	11.89	24.79	30.22	11.42	20.78	64.30
15. "	combined	11.33	20.24	96.38	11.17	23.05	30.65	11.26	20.80	65.29
16. 45 - 64	1	10.96	17.90	87.60	10.83	16.61	23.31	10.90	17.64	57.14
17. "	2	12.38	20.10	88.24	11.89	19.83	24.13	12.14	20.04	58.37
18. "	combined	11.64	18.97	87.98	11.33	18.10	23.72	11.49	18.79	57.76
19. 65-above	1	2.44	1.91	41.98	2.55	1.97	11.83	2.49	1.93	27.30
20. "	2	2.71	1.64	32.90	2.66	2.01	10.82	2.68	1.71	22.48
21. "	combined	2.57	1.78	37.38	2.60	1.98	11.33	2.58	1.82	24.90
22. all ages	1	100.00	100.00	53.62	100.00	100.00	15.19	100.00	100.00	35.39
23. "	2	100.00	100.00	54.32	100.00	100.00	14.49	100.00	100.00	35.36
24. "	combined	100.00	100.00	53.96	100.00	100.00	14.86	100.00	100.00	35.33
(number of sample persons)				(4,082)			(3,697)			(7,779)

TABLE 7.7.3 PERCENTAGE DISTRIBUTION OF POPULATION AND LABOUR FORCE, AND PROPORTION IN LABOUR FORCE IN AGE GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA ESTIMATED PERSONS

(NSS 7th round: 951 villages and 441 urban blocks)

age group years	sample	male			female			total		
		percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force	percent- age of popula- tion	percent- age of labour force	percent- age of popula- tion in labour force
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. 0 - 14	1	40.58	8.35	12.03	40.92	9.40	6.47	40.74	8.69	9.28
2. "	2	41.01	8.51	12.03	40.22	9.61	7.07	40.62	8.87	9.63
3. "	combined	40.78	8.43	12.03	40.56	9.50	6.76	40.68	8.78	9.45
4. 15 - 19	1	9.31	11.80	74.01	9.35	11.97	36.04	9.33	11.85	55.23
5. "	2	8.90	11.50	75.00	9.49	12.72	39.61	9.19	11.90	57.11
6. "	combined	9.11	11.66	74.48	9.42	12.34	37.80	9.26	11.88	56.15
7. 20 - 24	1	8.99	14.39	93.43	9.87	15.89	45.33	9.43	14.87	68.59
8. "	2	9.45	15.24	93.51	9.61	14.88	45.78	9.53	15.12	69.96
9. "	combined	9.22	14.80	93.47	9.75	15.39	45.54	9.48	14.99	69.26
10. 25 - 34	1	15.93	26.60	97.49	14.93	26.56	50.13	15.44	26.59	74.91
11. "	2	15.15	25.46	97.50	14.61	25.67	51.96	14.89	25.53	75.64
12. "	combined	15.55	26.04	97.50	14.78	26.12	51.01	15.17	26.07	75.26
13. 35 - 44	1	11.20	18.54	96.71	10.35	19.50	53.08	10.78	18.85	76.06
14. "	2	10.62	17.87	97.61	11.07	19.73	52.72	10.84	15.48	75.18
15. "	combined	10.92	18.22	97.14	10.70	19.62	52.90	10.81	18.67	75.63
16. 45 - 64	1	11.78	18.35	90.99	11.86	15.70	37.29	11.82	17.50	64.43
17. "	2	12.41	19.25	89.96	12.18	16.65	40.42	12.30	18.40	65.96
18. "	combined	12.09	18.79	90.47	12.02	16.17	38.84	12.05	17.94	65.19
19. 65-above	1	2.21	1.97	51.96	2.72	0.98	10.12	2.46	1.65	29.15
20. "	2	2.46	2.17	51.18	2.82	0.74	7.76	2.63	1.70	28.45
21. "	combined	2.33	2.06	51.56	2.77	0.86	8.95	2.55	1.67	28.80
22. all ages	1	100.00	100.00	58.40	100.00	100.00	28.17	100.00	100.00	43.50
23. "	2	100.00	100.00	58.01	100.00	100.00	29.57	100.00	100.00	44.10
24. "	combined	100.00	100.00	58.20	100.00	100.00	28.85	100.00	100.00	43.81
(number of sample persons)		(25,012)			(24,165)			(49,177)		



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 17.10.7(1): AVERAGE AGE AND PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL ESTIMATED PERSONS

(NSS 7th round: 961 villages)

activity status	sample	male		female		total	
		average age (years)	percent. of population	average age (years)	percent. of population	average age (years)	percent. of population
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. employer	1	38.16	0.97	44.81	0.31	39.53	0.64
2. "	2	44.04	1.23	45.66	0.39	44.34	0.76
3. "	combined	41.39	1.09	45.23	0.30	42.19	0.70
4. employee	1	30.56	16.11	32.17	9.53	31.15	12.85
5. "	2	31.22	15.93	31.26	10.76	31.24	13.39
6. "	combined	30.89	16.02	31.70	10.13	31.19	13.11
7. own account worker	1	37.95	30.26	34.63	5.11	37.47	17.78
8. "	2	37.85	29.06	35.52	5.72	37.48	17.59
9. "	combined	37.90	29.66	35.09	5.41	37.48	17.69
10. unpaid household labour	1	21.85	11.75	29.69	15.68	26.31	13.70
11. "	2	22.17	12.19	29.59	15.54	26.26	13.84
12. "	combined	22.01	11.97	29.64	15.62	26.29	13.77
13. total employed	1	32.73	59.09	31.43	30.63	32.30	44.97
14. "	2	32.90	58.42	31.34	32.31	32.36	45.58
15. "	combined	32.81	58.76	31.39	31.46	32.33	45.27
16. unemployed seeking employment	1	22.59	0.32	23.93	0.07	22.83	0.20
17. "	2	25.07	0.32	29.50	0.10	26.10	0.22
18. "	combined	23.82	0.32	27.12	0.08	24.50	0.21
19. family members in domestic work	1	17.24	0.78	29.43	27.99	29.10	14.28
20. "	2	19.34	0.64	29.45	27.36	29.21	13.78
21. "	combined	18.17	0.71	29.44	27.66	29.16	14.03
22. all activity status <sup>1</sup>	1	23.62	100.00	23.75	100.00	23.68	100.00
23. "	2	23.64	100.00	24.01	100.00	23.82	100.00
24. "	combined	23.62	100.00	23.88	100.00	23.75	100.00
(number of sample persons)		(20,930)		(20,468)		(41,398)	

<sup>1</sup> Includes others outside labour force.

TABLE 7 to 7-2 AVERAGE AGE AND PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA URBAN ESTIMATED PERSONS

(N88 7th round: 441 urban blocks)

activity status	sample	male		female		total	
		average age (years)	percent- age of popula- tion	average age (years)	percent- age of popula- tion	average age (years)	percent- age of popula- tion
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. employer	1	42.44	0.71	39.50	0.07	42.61	0.40
2. "	2	46.37	0.73	—	—	46.37	0.38
3. "	combined	44.37	0.72	44.50	0.04	44.38	0.39
4. employee	1	32.70	27.60	32.93	8.53	32.75	18.51
5. "	2	33.21	28.82	35.42	6.86	33.60	18.37
6. "	combined	32.95	28.18	33.99	7.73	33.16	18.44
7. own account worker	1	38.09	19.80	35.18	2.27	37.81	11.44
8. "	2	37.62	19.10	36.75	3.29	37.50	11.57
9. "	combined	37.87	19.47	36.08	2.76	37.67	11.51
10. unpaid household labour	1	24.84	3.29	31.20	3.91	28.15	3.59
11. "	2	26.17	3.49	33.01	4.12	29.71	3.79
12. "	combined	25.50	3.39	32.09	4.01	28.92	3.68
13. total employed	1	34.41	51.40	32.87	14.78	34.08	33.94
14. "	2	34.54	52.14	35.03	14.27	34.63	34.11
15. "	combined	34.47	51.76	33.89	14.54	34.35	34.02
16. unemployed seeking employment	1	27.12	2.22	25.29	0.41	26.86	1.36
17. "	2	26.50	2.08	26.46	0.22	26.50	1.24
18. "	combined	26.83	2.20	25.68	0.32	26.70	1.31
19. family members in domestic work	1	17.72	1.28	29.96	41.03	29.56	20.23
20. "	2	17.11	0.91	30.70	44.84	30.41	21.82
21. "	combined	17.89	1.10	30.33	42.85	29.99	20.99
22. all activity status <sup>1</sup>	1	24.16	100.00	23.43	100.00	23.82	100.00
23. "	2	24.75	100.00	24.41	100.00	24.59	100.00
24. "	combined	24.44	100.00	23.90	100.00	24.19	100.00
(number of sample persons)		(4,082)		(3,697)		(7,779)	

<sup>1</sup> Includes others outside labour force.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (7.10.7)3: AVERAGE AGE AND PERCENTAGE DISTRIBUTION OF POPULATION IN ACTIVITY STATUS GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA ESTIMATED PERSONS

(NSS 7th round: 951 villages and 441 urban blocks)

activity status	sample	male		female		total	
		average age (years)	percent age of population	average age (years)	percent age of population	average age (years)	percent age of population
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. employer	1	33.73	0.93	44.79	0.37	40.08	0.60
2. "	2	44.39	1.14	45.66	0.35	44.53	0.70
3. "	combined	41.74	1.03	45.20	0.36	42.43	0.65
4. employee	1	31.13	18.11	32.28	9.37	31.63	13.80
5. "	2	31.75	18.09	31.71	10.14	31.74	14.30
6. "	combined	31.44	18.10	31.99	9.74	31.63	14.00
7. own account worker	1	37.96	23.44	34.68	4.65	37.51	16.71
8. "	2	37.83	27.41	35.64	5.33	37.49	16.61
9. "	combined	37.91	27.93	35.13	4.96	37.50	16.67
10. unpaid household labour	1	22.02	10.28	29.76	13.76	26.40	12.00
11. "	2	22.33	10.73	29.75	13.73	26.44	12.30
12. "	combined	22.30	10.50	29.75	13.75	26.43	12.10
13. total employed	1	32.99	57.76	31.57	28.05	32.34	43.11
14. "	2	33.15	57.37	31.63	29.45	32.65	43.71
15. "	combined	33.07	57.56	31.59	28.73	32.59	43.42
16. unemployed seeking employment	1	25.28	0.65	24.64	0.13	25.18	0.39
17. "	2	25.89	0.63	28.63	0.12	26.31	0.38
18. "	combined	25.57	0.64	26.53	0.12	25.73	0.39
19. family members in domestic work	1	17.46	0.86	29.55	30.12	29.21	15.28
20. "	2	18.94	0.68	29.75	30.13	29.50	15.09
21. "	combined	18.10	0.77	29.64	30.12	29.34	15.19
22. all activity status <sup>1</sup>	1	23.70	100.00	23.70	100.00	23.71	100.00
23. "	2	23.82	100.00	24.07	100.00	23.94	100.00
24. "	combined	23.76	100.00	23.88	100.00	23.82	100.00
(number of sample persons)		(25,012)		(24,165)		(49,177)	

<sup>1</sup> Includes others outside labour force.



TABLE 7.12.701 : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DURATION OF ACTIVITY STATUS GROUPS, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL ESTIMATED MALES

(NSS 7th round : 951 villages)

activity status	sample	duration of activity status							average duration (years)	percentage of population
		0-1 year	1-2 years	2-4 years	4-7 years	7-12 years	12 years -above	all durations		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. employer	1	3.96	2.69	9.77	9.49	15.87	58.22	100.00	17.58	0.97
2. "	2	3.26	3.73	8.86	7.46	12.82	63.87	100.00	18.57	1.22
3. "	combined	3.58	3.26	9.27	8.38	14.19	61.32	100.00	18.12	1.09
4. employee	1	10.85	9.74	13.52	11.81	16.06	38.02	100.00	11.97	16.11
5. "	2	9.55	10.32	12.41	11.66	17.88	38.18	100.00	12.28	15.93
"	combined	10.19	10.02	12.98	11.74	16.95	38.12	100.00	12.12	16.02
6. own account worker	1	3.40	4.10	6.31	8.38	13.09	64.72	100.00	18.50	30.26
8. "	2	3.18	4.04	7.26	8.19	14.85	62.48	100.00	18.23	29.08
9. "	combined	3.29	4.07	6.77	8.29	13.94	63.64	100.00	18.37	29.68
10. unpaid household labour	1	10.81	15.63	20.57	14.73	18.54	19.72	100.00	7.92	11.75
11. "	2	10.95	16.48	20.14	16.74	18.03	17.66	100.00	7.41	12.19
12. "	combined	10.88	16.07	20.35	15.75	18.28	18.67	100.00	7.66	11.97
13. all employed	1	6.89	7.88	11.13	10.58	15.02	48.50	100.00	14.63	59.09
14. "	2	6.52	8.34	11.38	10.90	16.30	46.56	100.00	14.37	58.42
15. "	combined	6.72	8.10	11.25	10.74	15.64	47.55	100.00	14.50	58.76
(number of sample persons)									(12,012)	

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (7.12.7)2 PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN DURATION OF ACTIVITY STATUS GROUPS, FROM TWO INDEPENDENT  
SAMPLES: ALL-INDIA URBAN ESTIMATED MALES

(NSS 7th round: 441 urban blocks)

activity status	sample	duration of activity status							average duration (years)	percent- age of popula- tion
		0-1 year	1-2 years	2-4 years	4-7 years	7-12 years	12 years -above	all dura- tions		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. employer	1	12.50	5.77	5.77	4.81	8.65	62.50	100.00	17.39	0.71
2. „	2	—	—	—	30.77	17.31	51.92	100.00	18.16	0.73
3. „	combined	6.25	2.88	2.88	17.79	12.98	57.22	100.00	17.78	0.72
4. employee	1	11.11	9.92	16.60	16.84	15.94	29.59	100.00	9.82	27.60
5. „	2	9.53	8.43	12.40	18.58	18.72	32.34	100.00	10.82	28.82
6. „	combined	10.33	9.19	14.54	17.69	17.31	30.94	100.00	10.31	28.18
7. own account worker	1	9.41	9.47	13.80	9.93	17.16	40.23	100.00	12.79	19.80
8. „	2	8.52	5.74	8.82	16.78	16.97	43.17	100.00	13.82	19.10
9. „	combined	9.00	7.72	11.45	13.16	17.07	41.60	100.00	13.27	19.47
10. unpaid house- hold labour	1	10.53	9.72	14.68	25.99	22.22	16.86	100.00	7.60	3.29
11. „	2	18.28	11.09	11.91	18.68	16.22	23.82	100.00	8.27	3.49
12. „	combined	14.33	10.39	13.32	22.40	19.27	20.29	100.00	7.93	3.39
13. all employed	1	10.43	9.68	15.25	14.60	16.72	33.32	100.00	10.92	51.40
14. „	2	9.61	7.50	10.88	18.10	17.90	36.01	100.00	11.85	52.14
15. „	combined	10.04	8.63	13.14	16.30	17.29	34.60	100.00	11.37	51.76
(number of sample persons)										(2,111)

TABLE 7.12.13. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DURATION OF ACTIVITY STATUS GROUPS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA ESTIMATED MALES

(NBS 7th round: 951 villages and 441 urban blocks)

activity status	sample	duration of activity status							average duration (years)	percentage of population
		0-1 year	1-2 years	2-4 years	4-7 years	7-12 years	12 years -above	all durations		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. employer	1	5.06	3.09	9.26	8.89	14.94	58.76	100.00	17.55	0.93
2. "	2	2.91	2.32	7.90	9.98	13.30	62.58	100.00	18.53	1.14
3. "	combined	3.89	3.22	8.52	9.48	14.05	60.84	100.00	18.08	1.03
4. employee	1	10.92	9.78	14.34	13.15	16.02	35.79	100.00	11.40	18.11
5. "	2	9.54	9.82	12.41	13.51	18.10	36.62	100.00	11.89	18.09
6. "	combined	10.23	9.80	13.39	13.32	17.04	36.22	100.00	11.64	18.10
7. own account worker	1	4.13	4.75	7.22	8.57	13.59	61.74	100.00	17.81	28.44
8. "	2	3.78	4.24	7.45	9.19	15.11	60.23	100.00	17.72	27.41
9. "	combined	3.97	4.50	7.33	8.87	14.32	61.01	100.00	17.76	27.93
10. unpaid household labour	1	10.79	15.30	20.24	15.38	18.74	19.55	100.00	7.91	10.28
11. "	2	11.35	16.19	19.69	16.85	17.93	17.99	100.00	7.45	10.73
12. "	combined	11.08	15.75	19.96	16.12	18.33	18.76	100.00	7.68	10.50
13. all employed	1	7.45	8.16	11.78	11.21	15.28	46.12	100.00	14.05	57.76
14. "	2	7.00	8.21	11.30	12.00	16.54	44.95	100.00	13.98	57.37
15. "	combined	7.22	8.18	11.54	11.59	15.90	45.57	100.00	14.02	57.56

(number of sample persons)

(14,123)



TABLE (8.2.7) : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL ESTIMATED PERSONS  
(NSS 7th round : 951 villages)

occupation	male			female			total		number of persons
	sample 1	sample 2	com- bined	sample 1	sample 2	com- bined	sample 1	sample 2	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. medical work	0.06	0.12	0.09	0.06	0.25	0.15	0.06	0.16	0.11
2. teaching	0.34	0.51	0.43	0.29	0.24	0.26	0.33	0.43	0.38
3. administrative and technical work	1.73	1.52	1.62	0.32	0.48	0.40	1.29	1.16	1.21
4. peon, cleaner, scavenger	1.59	1.11	1.36	0.82	1.02	0.92	1.33	1.09	1.20
5. supervisory work on plant and machinery	—	0.02	0.01	—	—	—	—	—	—
6. operatives and artisans	4.47	5.45	4.96	2.54	3.27	2.90	3.83	4.51	4.16
7. washerman, barber, cook	1.28	1.56	1.41	1.24	1.77	1.51	1.26	1.63	1.45
8. farmer	3.40	4.16	3.77	1.97	2.47	2.23	2.92	3.53	3.23
9. cultivator	49.07	45.09	47.41	45.79	41.04	43.44	47.90	44.09	45.99
10. share-cropper	5.08	5.97	5.52	3.09	3.87	3.48	4.42	5.25	4.82
11. agricultural labour	17.70	19.05	18.35	29.85	31.43	30.64	21.79	23.26	22.52
12. forestry, fishery, livestock workers	7.11	8.56	7.82	5.25	4.89	5.08	6.48	7.31	6.88
13. manufacturer of food products	0.87	0.84	0.85	2.07	2.04	2.06	1.57	1.87	1.71
14. manufacturer of textiles	1.08	0.66	0.88	3.13	3.27	3.20	1.77	1.99	1.84
15. building industry worker	0.57	0.54	0.56	—	0.19	0.07	0.58	0.39	0.48
16. hawker	0.73	0.62	0.68	0.64	0.48	0.56	0.70	0.67	0.64
17. retailer	1.99	1.60	1.80	0.69	0.79	0.73	1.55	1.45	1.50
18. wholesaler and financial operator	0.22	0.24	0.23	0.12	0.03	0.06	0.18	0.18	0.18
19. unskilled labour	2.71	1.58	2.16	2.15	2.76	2.48	2.35	1.92	2.13
20. all occupations	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE (8.2.7) : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY SEX FROM TWO INDEPENDENT SAMPLES : ALL INDIA URBAN ESTIMATED PERSONS  
(NSS 7th round : 441 urban blocks)

occupation	male			female			total			number of sample persons
	sample 1	sample 2	com- bined	sample 1	sample 2	com- bined	sample 1	sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. medical work	1.08	0.99	1.04	1.20	0.28	0.77	1.11	0.85	0.98	29
2. teaching	1.67	0.93	1.32	3.76	2.80	3.30	2.09	1.30	1.71	42
3. administrative and technical work	15.33	12.79	14.10	1.40	1.62	1.51	12.51	10.59	11.59	316
4. peon, cleaner, scavenger	9.92	10.23	10.07	5.77	7.33	6.50	9.07	9.66	9.36	263
5. supervisory work on plant and machinery	0.43	0.07	0.26	—	—	—	0.35	0.05	0.21	6
6. operatives and artisans	17.96	16.68	17.33	5.46	6.15	5.79	15.42	11.61	15.03	424
7. washerman, barber, cook	2.98	3.26	3.12	6.22	8.51	7.29	3.63	4.26	3.95	106
8. farmer	1.07	1.29	1.18	—	1.90	0.90	0.85	1.41	1.12	24
9. cultivator	6.14	9.77	7.89	9.42	8.89	9.17	6.81	9.59	8.14	172
10. share-cropper	1.11	0.97	1.04	0.55	2.52	1.48	1.00	1.28	1.13	25
11. agricultural labour	8.63	6.65	7.68	30.74	15.10	23.33	13.11	8.32	10.80	220
12. forestry, fishery, livestock workers	3.99	4.96	4.46	6.11	7.44	6.74	4.43	5.45	4.92	122
13. manufacturer of food products	2.70	3.34	3.02	4.76	6.14	5.43	3.12	3.90	3.50	95
14. manufacturer of textiles	4.60	4.91	4.75	7.37	8.50	7.91	5.15	5.63	5.38	147
15. building industry worker	1.83	1.94	1.88	0.80	1.06	0.93	1.62	1.77	1.69	42
16. hawker	3.65	1.92	2.81	0.95	—	0.50	3.10	1.54	2.35	69
17. retailer	8.27	7.62	7.95	2.31	4.87	3.52	7.06	7.07	7.07	197
18. wholesaler and financial operator	3.35	3.86	3.59	0.50	—	0.26	2.78	3.10	2.93	89
19. unskilled labour	5.29	7.82	6.51	12.68	16.89	14.67	6.79	9.60	8.14	214
20. all occupations	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	2,401

TABLE (8.2.7)3: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY SEX FROM TWO INDEPENDENT SAMPLES: ALL-INDIA ESTIMATED PERSONS  
(NSS 7th round: 951 villages and 441 urban blocks)

occupation	male			female			total			number of sample persons
	sample 1	sample 2	com- bined	sample 1	sample 2	com- bined	sample 1	sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. medical work	0.21	0.25	0.23	0.16	0.25	0.20	0.20	0.25	0.22	53
2. teaching	0.55	0.57	0.56	0.57	0.44	0.50	0.55	0.53	0.54	112
3. administrative and technical work	3.82	3.20	3.52	0.41	0.58	0.49	2.73	2.35	2.55	528
4. peon, cleaner, scavenger	2.87	2.48	2.68	1.23	1.50	1.37	2.35	2.16	2.26	481
5. supervisory work on plant and machinery	0.07	0.02	0.05	—	—	—	0.05	0.02	0.03	7
6. operatives and artisans	6.55	7.14	6.84	2.79	3.40	3.14	5.35	5.96	5.65	1,169
7. washorman, barber, cook	1.54	1.81	1.67	1.66	2.30	1.98	1.58	1.97	1.77	343
8. farmer	3.04	3.73	3.38	1.81	2.43	2.11	2.65	3.31	2.97	653
9. cultivator	42.46	40.31	41.40	42.56	38.56	40.58	42.49	39.74	41.14	9,039
10. share-cropper	4.47	5.22	4.84	2.89	3.76	3.32	3.97	4.75	4.37	913
11. agricultural labour	16.30	17.19	16.73	29.93	30.17	30.05	29.64	21.38	21.01	4,098
12. forestry, fishery, livestock workers	6.64	8.02	7.31	5.32	5.69	5.51	6.21	7.07	6.64	1,387
13. manufacturer of food products	1.15	1.22	1.19	2.28	2.35	2.32	1.51	1.59	1.55	397
14. manufacturer of textiles	1.62	1.30	1.46	3.49	3.66	3.57	2.22	2.06	2.14	381
15. building industry worker	0.76	0.75	0.76	0.07	0.18	0.12	0.54	0.57	0.55	117
16. hawker	1.18	0.81	1.00	0.67	0.45	0.56	1.02	0.69	0.86	164
17. retailer	2.96	2.67	2.82	0.81	1.10	0.96	2.28	2.17	2.22	438
18. wholesaler and financial operator	0.70	0.79	0.74	0.15	0.03	0.09	0.52	0.54	0.53	119
19. unskilled labour	3.11	2.52	2.82	3.21	3.66	3.43	3.14	2.89	3.02	597
20. all occupations	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	20,001



TABLE (8.5.7)1: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY INDUSTRY: ALL INDIA  
RURAL ESTIMATED MALES  
(NSS 7th round: 951 villages)

industry	occupation <sup>1</sup>																					total employed popul. in rural area
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)		
1. production of cereals	—	0.01	0.03	0.08	0.01	0.10	—	63.88	7.10	22.51	6.10	—	—	—	—	—	—	0.18	100.00	74.78		
2. production of pulses	—	—	—	—	—	—	—	80.01	5.71	5.71	8.57	—	—	—	—	—	—	—	100.00	0.26		
3. production of money crop, jute and cotton	—	—	—	1.28	—	—	—	41.03	—	20.51	33.33	—	—	—	—	—	—	3.85	100.00	0.45		
4. other agricultural produc- tion	—	—	0.03	—	—	—	—	37.10	6.29	20.13	35.22	—	—	—	—	—	—	0.63	100.00	1.13		
5. production of plantation crops	—	—	4.55	—	—	—	—	13.64	—	—	81.81	—	—	—	—	—	—	—	100.00	0.20		
6. forestry, fishery, livestock	—	—	0.27	0.14	—	0.14	—	—	—	0.54	98.23	0.14	—	—	—	0.27	—	0.27	100.00	6.13		
7. mining	—	—	10.87	4.35	—	58.70	—	—	—	—	—	—	—	2.17	—	2.17	—	21.74	100.00	0.38		
8. manufacture of food products	—	—	5.08	3.39	—	3.39	—	—	—	1.69	2.54	75.43	—	—	—	—	5.09	3.39	100.00	1.08		
9. manufacture of textiles	—	—	2.41	1.20	—	45.78	—	—	0.60	—	—	—	48.81	—	—	—	—	1.20	100.00	1.59		
10. other manufacturing	0.25	—	3.02	2.51	—	89.45	—	—	—	—	—	—	0.50	0.50	—	—	—	3.77	100.00	3.63		
11. construction and sanitary services	—	—	1.46	19.71	—	5.84	—	—	—	—	2.19	—	—	—	45.98	—	0.73	—	24.09	100.00	1.10	
12. trade and commerce	—	—	1.88	0.94	—	1.25	—	—	—	—	1.88	0.62	—	—	20.31	65.62	6.88	0.62	100.00	2.77		
13. transport and communica- tion	—	—	16.98	17.92	—	48.13	—	—	—	—	0.94	—	—	—	—	—	—	0.94	15.09	100.00	0.88	
14. public services	—	—	1.05	42.11	54.74	2.10	—	—	—	—	—	—	—	—	—	—	—	—	100.00	0.77		
15. professional services	3.45	13.53	20.95	6.63	—	2.39	41.37	—	—	—	1.06	0.27	—	0.27	0.53	—	—	0.27	0.28	100.00	3.16	
16. others	—	—	4.35	8.07	—	8.70	—	—	—	2.48	13.66	—	—	—	2.48	—	—	1.24	59.02	100.00	1.70	
all industries	0.09	0.42	1.62	1.36	0.01	4.96	1.41	47.41	5.52	18.35	11.59	0.85	0.88	0.88	0.56	0.68	1.90	0.23	2.16	100.00	100.00	

<sup>1</sup> (1) medical work; (2) teaching; (3) administrative and technical work; (4) peon, cleaner, scavenger; (5) supervisory work on plant and machinery; (6) operatives and artisans; (7) washerman, barber, cook; (8) cultivator; (9) share-cropper; (10) agricultural labour; (11) farmer; forestry, fishery, livestock workers; (12) manufacturer of food products; (13) manufacturer of textiles; (14) building industry worker; (15) hawker; (16) retailer; (17) wholesaler and financial operator; (18) unskilled labour.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

**TABLE (8.5.7)2: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY INDUSTRY - ALL INDIA**  
**RURAL ESTIMATED FEMALES**  
**(NSS 7th round : 951 villages)**

industry	occupation <sup>1</sup>																		percent- age of total employed popula- tion
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1. production of cereals	—	—	0.06	—	0.02	—	56.84	4.48	34.00	1.15	0.12	—	—	—	—	—	—	0.33	100.00
2. production of pulses	—	—	—	—	—	—	61.91	9.52	28.57	—	—	—	—	—	—	—	—	—	100.00
3. production of money crop, jute and cotton	—	—	—	—	—	—	35.48	—	45.16	16.13	—	—	—	—	—	—	—	3.23	100.00
4. other agricultural production	—	—	2.90	—	—	—	24.64	—	20.29	47.82	1.45	—	—	—	—	2.90	—	—	100.00
5. production of plantation crops	—	—	—	—	—	—	—	—	—	93.32	—	—	—	—	—	—	—	6.67	100.00
6. forestry, fishery, livestock	—	—	—	—	—	—	—	—	—	94.52	3.26	—	—	—	0.91	—	—	1.37	100.00
7. mining	—	—	—	—	—	—	—	—	—	—	—	11.11	—	—	—	—	—	22.22	100.00
8. manufacture of food products	—	—	1.85	2.78	0.93	—	—	—	—	—	—	53.84	—	—	0.93	0.93	0.93	2.77	100.00
9. manufacture of textiles	—	—	—	—	4.49	35.00	—	—	—	—	—	—	—	—	—	—	—	—	100.00
10. other manufacturing	—	—	1.60	0.80	83.20	—	—	—	—	—	—	—	11.20	—	—	—	—	3.20	100.00
11. construction and sanitary services	—	—	—	—	57.14	8.57	—	—	—	—	—	—	—	11.43	—	—	—	22.86	100.00
12. trade and commerce	—	—	—	—	—	4.29	—	—	—	4.29	—	—	—	—	—	—	—	—	100.00
13. transport and communication	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34.23	54.23	2.03	—	100.00
14. public services	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00
15. professional services	4.67	7.04	—	—	—	—	39.33	—	—	—	—	—	—	—	0.47	—	—	20.38	100.00
16. others	—	—	2.37	4.55	—	—	—	—	—	—	6.82	—	—	—	—	—	—	2.37	100.00
17. all industries	0.15	0.26	0.40	0.40	0.92	2.90	1.51	43.23	3.43	39.64	7.20	2.06	3.20	0.05	0.56	0.53	0.06	2.46	100.00

<sup>1</sup> (1) medical work; (2) teaching; (3) administrative and technical work; (4) joiner, shoemaker, carpenter; (5) operator and mechanic; (6) washerman, cooper; (7) cultivator; (8) share-cropper; (9) share-cropper; (10) agricultural labourer; (11) farmer; (12) forester; (13) fisherman; (14) fisherman; (15) fisherman; (16) fisherman; (17) fisherman; (18) fisherman; (19) fisherman; (20) fisherman.

TABLE (8.5.7)3: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY INDUSTRY, ALL-INDIA  
RURAL ESTIMATED PERSONS  
(NSS 7th round: 951 villages)

industry	occupation <sup>1</sup>																		percent- age of esti- mated popula- tion			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		all occu- pa- tions	(21)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)		
1. production of cereals	—	0.01	0.04	0.05	0.01	0.07	—	61.34	6.15	26.66	5.40	0.04	—	—	—	—	—	0.23	100.00	76.60		
2. production of pulses	—	—	—	—	—	—	—	73.21	7.14	14.29	5.36	—	—	—	—	—	—	—	100.00	0.30		
3. production of money crop, jute and cotton	—	—	—	0.92	—	—	—	39.45	—	27.52	28.44	—	—	—	—	—	—	—	—	0.40		
4. other agricultural produc- tion	—	—	1.32	—	—	—	—	33.32	4.39	20.18	39.03	0.44	—	—	—	—	0.88	—	3.67	100.00	0.40	
5. production of plantation crops	—	—	2.70	—	—	—	—	8.11	—	—	86.49	—	—	—	—	—	—	0.44	100.00	1.07		
6. forestry, fishery, livestock	—	—	0.21	0.10	—	0.10	—	—	—	0.42	97.39	0.84	—	—	0.21	0.21	—	—	2.70	100.00	0.22	
7. mining	—	—	9.09	3.64	—	59.99	—	—	—	—	—	—	1.82	1.82	—	1.82	—	—	0.52	100.00	5.20	
8. manufacture of food products	—	—	3.54	3.10	—	2.21	—	—	—	0.88	1.33	81.86	—	—	0.44	3.10	0.44	—	21.82	100.00	0.30	
9. manufacture of textiles	—	—	3.49	0.58	—	40.70	—	—	0.29	—	—	—	54.36	—	—	—	—	—	0.58	100.00	2.35	
0. other manufacturing	0.19	—	2.68	2.10	—	87.96	—	—	—	—	—	—	3.06	0.38	—	—	—	—	3.63	100.00	3.15	
1. construction, and sanitary services	—	—	1.16	27.33	—	6.39	—	—	—	—	1.74	—	—	—	38.96	—	0.58	—	23.84	100.00	0.95	
2. trade and commerce	—	—	1.54	0.77	—	1.79	—	—	—	—	2.31	0.51	—	—	22.82	63.60	6.15	—	0.51	100.00	2.27	
3. transport and communica- tion	—	—	16.22	17.12	—	47.74	—	—	—	—	0.90	—	—	—	—	—	—	—	0.90	17.12	100.00	0.61
4. public services	—	—	1.02	42.86	54.08	2.04	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00	0.52	
5. professional services	3.89	11.51	14.38	8.46	—	1.52	40.27	—	—	1.02	1.18	—	0.17	—	0.51	—	—	—	0.17	16.92	100.00	3.31
6. others	—	—	3.90	7.32	—	6.83	—	—	—	1.95	12.20	—	—	—	1.95	—	—	—	1.46	64.39	100.00	1.39
7. all industries	0.11	0.36	1.21	1.20	0.01	4.26	1.45	46.03	4.83	22.52	10.13	1.27	1.66	0.39	0.64	1.50	0.17	2.26	100.00	100.00	100.00	

<sup>1</sup> (1) medical work; (2) teaching; (3) administrative and technical work; (4) peon, cleaner, scavenger; (5) supervisory work on plant and machinery; (6) operatives and artisans; (7) washerman, barber, cook; (8) cultivator; (9) share-cropper; (10) agricultural labour; (11) forestry, fishery, livestock workers; (12) manufacturer of food products; (13) manufacturer of textiles; (14) building industry worker; (15) hawker; (16) retailer; farmer; (17) wholesaler and financial operator; (18) unskilled labour.



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (8.5.7/4): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY INDUSTRY: ALL INDIA

URBAN ESTIMATED MALES

(NSS 7th round : 441 urban blocks)

industry	occupation <sup>1</sup>																		percent- age of occupa- tions	estima- tion
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
1. production of cereals	—	—	—	0.35	—	—	—	44.56	6.32	40.35	8.07	0.35	—	—	—	—	—	—	100.00	16.85
2. other agricultural produc- tion	—	—	—	—	—	—	—	21.88	3.12	37.50	37.50	—	—	—	—	—	—	—	100.00	1.50
3. forestry, fishery, livestock	—	—	—	2.63	—	1.32	—	—	—	—	90.78	1.32	—	—	—	—	3.95	—	100.00	3.70
4. mining	—	—	—	8.33	—	91.67	—	—	—	—	—	—	—	—	—	—	—	—	100.00	0.58
5. manufacture of food products	—	—	—	18.65	1.69	—	10.17	—	—	—	—	1.69	51.70	—	2.54	1.69	4.24	7.63	100.00	9.50
6. manufacture of textiles	0.40	—	—	5.83	6.79	1.46	27.66	0.40	—	—	—	—	0.49	53.39	—	—	0.49	2.91	100.00	9.22
7. other manufacturing	0.45	—	—	11.61	7.59	0.80	74.10	—	—	—	—	—	—	—	0.45	—	0.45	4.46	100.00	9.97
8. construction and sanitary services	—	—	—	6.82	19.32	—	13.64	4.55	—	—	—	—	—	43.17	—	—	12.50	—	100.00	3.99
9. trade and commerce	—	—	—	15.08	5.03	—	0.26	—	—	—	—	—	0.26	—	16.14	46.04	15.34	1.85	100.00	16.61
10. transport and communica- tion	0.57	—	—	19.55	16.67	0.57	44.26	0.57	—	—	—	—	—	0.57	—	—	—	17.24	100.00	8.15
11. public services	1.26	0.63	49.68	39.62	—	—	3.15	—	—	—	—	0.63	—	—	0.63	—	—	4.49	100.00	7.19
12. professional services	6.71	8.83	23.33	19.08	—	—	5.65	23.33	—	—	—	—	0.35	—	0.35	0.35	1.77	10.25	100.00	13.00
13. other services	—	—	—	8.33	18.33	—	5.00	—	—	—	—	3.33	—	—	—	—	5.00	0.01	100.00	2.88
14. others	—	—	—	—	—	—	93.75	—	—	—	—	—	—	—	—	—	—	—	100.00	0.05
15. all industries	1.04	1.32	14.10	10.07	0.26	17.33	3.12	7.89	1.04	7.68	5.64	3.02	4.76	1.98	2.81	7.06	3.00	6.61	100.00	100.00

<sup>1</sup> (1) medical work; (2) teaching; (3) administrative and technical work; (4) peon, cleaner, scavenger; (5) supervisory work; (6) labour and operative workers; (7) washman, barber, cook; (8) cultivator; (9) share cropper; (10) agricultural labourer; (11) factory worker; (12) manufacturer of food products; (13) manufacturer of textiles; (14) building industry worker; (15) hawker; (16) retailer; (17) wholesaler and financial operator; (18) unskilled labour.

TABLE (8.5.7)3: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY INDUSTRY: ALL INDIA  
URBAN ESTIMATED FEMALES  
(NSS 7th round: 441 urban blocks)

industry	occupation <sup>1</sup>																		percentage of population in all occupations
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
1. production of cereals	—	—	—	—	—	—	—	28.57	4.51	63.91	2.26	—	—	—	—	—	—	0.75	100.00
2. other agricultural production	—	—	—	—	—	—	—	—	—	72.73	27.27	—	—	—	—	—	—	—	100.00
3. forestry, fishery, livestock	—	—	—	—	—	—	—	—	—	—	100.00	—	—	—	—	—	—	—	100.00
4. mining	—	—	—	—	—	100.00	—	—	—	—	—	—	—	—	—	—	—	—	100.00
5. manufacture of food products	—	—	—	10.81	2.70	—	2.70	—	—	—	—	75.68	—	—	—	—	—	—	100.00
6. manufacture of textiles	—	—	—	—	—	19.15	—	—	—	—	—	—	74.46	4.26	—	2.70	—	5.41	100.00
7. other manufacturing	—	—	—	—	16.67	77.77	—	—	—	—	—	—	—	—	—	—	—	2.13	100.00
8. construction and sanitary services	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.56	100.00
9. trade and commerce	—	—	—	—	46.16	—	7.69	—	—	—	—	—	—	15.38	—	—	30.77	—	100.00
10. transport and communication	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.09	86.36	4.55	—	100.00
1. public services	—	—	—	20.00	—	20.00	—	—	—	—	—	—	—	—	—	—	—	60.00	100.00
2. professional services	3.76	12.03	1.50	15.04	—	23.31	—	—	—	—	—	—	—	—	—	—	—	100.00	100.00
3. other services	—	—	7.69	15.38	—	—	—	—	—	—	—	0.75	—	—	—	—	—	43.61	100.00
4. others	—	—	—	—	4.35	95.65	—	—	—	—	—	—	7.69	—	—	—	—	69.24	100.00
5. all industries	0.77	3.30	1.51	6.50	5.79	7.29	9.17	1.48	23.33	7.64	5.43	7.91	0.93	0.50	3.52	0.26	14.67	100.00	100.00

<sup>1</sup> (1) medical work; (2) teaching; (3) administrative and technical work; (4) peon, cleaner, scavenger; (5) operatives and artisans; (6) washerman, barber, cook; (7) cultivator; (8) share-cropper; (9) agricultural labour; (10) farmer; forestry, fishery, livestock workers; (11) manufacturer of food products; (12) manufacturer of textiles; (13) building industry worker; (14) hawker; (15) retailer; (16) wholesaler and financial operator; (17) unskilled labour.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (8.5.76): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN OCCUPATION GROUPS BY INDUSTRY: ALL INDIA  
URBAN ESTIMATED PERSONS  
(NSS 7th round: 441 urban blocks)

industry	occupation <sup>1</sup>																		percent- age of all occu- pation
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1. production of cereals	—	—	0.24	—	—	—	—	39.47	5.74	47.85	6.22	0.24	—	—	—	—	—	0.24	100.00
2. other agricultural production	—	—	—	—	—	—	—	10.28	2.33	40.51	34.88	—	—	—	—	—	—	—	100.00
3. forestry, fishery, livestock	—	—	—	1.87	—	0.93	—	—	—	—	93.47	0.93	—	—	—	—	—	2.80	100.00
4. mining	—	—	—	7.14	—	92.86	—	—	—	—	—	—	—	—	—	—	—	—	100.00
5. manufacture of food products	—	—	16.77	1.94	—	7.74	0.65	—	—	—	1.29	57.40	—	—	1.94	1.94	3.23	7.10	100.00
6. manufacture of textiles	0.40	—	4.74	5.53	1.19	26.08	0.40	—	—	—	—	0.40	57.30	0.79	—	—	0.40	2.77	100.00
7. other manufacturing	0.41	—	10.74	8.26	0.83	74.39	—	—	—	—	—	—	—	—	0.41	—	0.41	4.00	100.00
8. construction and sanitary services	—	—	5.94	22.77	—	11.88	4.90	—	—	—	—	—	—	39.61	—	—	14.85	—	100.00
9. trade and commerce	—	—	11.25	4.75	—	0.25	—	—	—	—	—	0.25	—	—	13.73	18.25	14.75	1.70	100.00
0. transport and communication	0.56	—	19.55	16.20	0.56	13.57	0.56	—	—	—	—	—	0.56	—	—	—	—	18.44	100.00
1. public services	1.24	0.62	49.08	39.13	—	3.10	—	—	—	—	0.62	—	—	—	0.62	—	—	3.00	100.00
2. professional services	5.77	9.86	16.35	17.79	—	3.85	23.31	—	—	—	—	0.48	—	—	0.24	0.24	1.70	23.91	100.00
3. other services	—	—	8.22	17.81	—	4.11	—	—	—	—	2.74	—	1.37	—	—	—	4.11	61.64	100.00
14. others	—	—	5.13	—	—	94.87	—	—	—	—	—	—	—	—	—	—	—	—	100.00
15. all industries	0.98	1.71	11.59	9.36	0.21	15.03	3.95	8.14	1.43	10.80	6.04	3.40	5.38	1.60	2.00	7.67	2.00	5.34	100.00

<sup>1</sup> (1) medical work; (2) teaching; (3) administrative and technical work; (4) post, courier, messenger; (5) transport; (6) operative, and artisan; (7) washerman, barber, cook; (8) electrician; (9) driver, operator; (10) agricultural labourer; (11) labourer in manufacturing industry; (12) manufacturer of food products; (13) manufacturer of textiles; (14) building industry worker; (15) housewife; (16) student; (17) unskilled labour operator; (18) unskilled labour.



TABLE (8.6.7)1: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN ACTIVITY STATUS GROUPS BY OCCUPATION: ALL-INDIA RURAL ESTIMATED PERSONS

(NSS 7th round: 951 villages)

occupation	male										female				total	
	activity status					activity status					activity status					total
	em- plo- yer	em- plo- yer	own acco- unt	unpaid house- hold worker	total	em- plo- yer	em- plo- yer	own acco- unt	unpaid house- hold worker	total	em- plo- yer	em- plo- yer	own acco- unt	unpaid house- hold worker	total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
1. administrative and technical work	1.69	41.29	31.03	22.99	100.00	1.22	3.49	28.19	67.10	100.00	1.51	29.10	29.98	39.41	100.00	
2. peon, cleaner, scavenger	0.35	93.72	5.41	0.52	100.00	—	85.89	11.34	2.77	100.00	0.25	91.71	6.93	1.10	100.00	
3. operatives and artisans	0.19	27.76	61.77	10.28	100.00	0.79	19.02	40.17	40.02	100.00	0.33	25.73	56.75	17.18	100.00	
4. washerman, barber, cook	—	34.39	57.83	7.78	100.00	0.61	42.60	18.32	38.47	100.00	0.22	37.30	43.84	18.64	100.00	
5. farmer	36.64	0.47	44.65	18.24	100.00	37.85	0.94	18.77	42.44	100.00	36.92	0.58	38.68	23.82	100.00	
6. cultivator	0.58	0.57	71.02	27.83	100.00	0.11	0.82	14.78	84.29	100.00	0.43	0.65	53.05	45.87	100.00	
7. share-cropper	0.43	0.68	71.38	27.32	100.00	0.26	0.79	12.20	86.75	100.00	0.39	0.84	56.86	41.91	100.00	
8. agricultural labour	0.16	92.67	6.57	0.60	100.00	—	86.19	8.81	5.00	100.00	0.09	89.69	7.60	2.62	100.00	
9. forestry, fishery, livestock workers	0.65	34.93	23.05	41.37	100.00	0.27	23.73	21.72	54.28	100.00	0.56	32.13	22.72	44.59	100.00	
10. manufacturer of food products	0.55	28.46	58.70	12.29	100.00	—	29.43	34.72	35.85	100.00	0.25	28.99	45.50	25.26	100.00	
11. manufacturer of textiles	—	41.35	49.46	9.19	100.00	—	1.16	63.56	35.28	100.00	—	15.17	58.64	26.19	100.00	
12. building industry worker	1.28	67.45	31.27	—	100.00	—	63.64	—	36.36	100.00	1.22	67.27	29.68	1.63	100.00	
13. hawker	2.10	1.22	89.86	6.82	100.00	—	1.64	88.11	10.25	100.00	1.47	1.35	89.34	7.84	100.00	
14. retailer	1.82	1.75	81.08	15.35	100.00	—	2.52	65.72	31.76	100.00	1.52	1.88	78.52	18.08	100.00	
15. unskilled labour	—	81.97	16.93	1.10	100.00	0.57	81.59	12.81	5.03	100.00	0.21	81.83	15.42	2.54	100.00	
16. all occupations <sup>1</sup> (number of sample persons)	1.87	27.46	50.38	20.29	100.00 (12,012)	0.96	32.32	17.19	49.53	100.00 (6,278)	1.56	29.12	39.01	30.31	100.00 (18,290)	

<sup>1</sup> Includes occupations not listed.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (8.6.7)2: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN ACTIVITY STATUS GROUPS BY OCCUPATION: ALL-INDIA URBAN ESTIMATED PERSONS

(NSS 7th round: 441 urban blocks)

occupation	male						female						total			
	activity status			activity status			activity status			activity status			activity status			
	emplo- yer	emplo- yee	unpaid acco- unt house- holder worker labour	total	emplo- yer	emplo- yee	unpaid acco- unt house- holder worker labour	total	emplo- yer	emplo- yee	unpaid acco- unt house- holder worker labour	total	emplo- yer	emplo- yee	unpaid acco- unt house- holder worker labour	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1. administrative and technical work	0.85	75.38	20.69	3.08	100.00	4.46	5.80	32.15	57.59	100.00	1.18	69.05	21.73	8.04	100.00	
2. peon, cleaner, scavenger	—	96.56	3.44	—	100.00	—	83.33	16.67	—	100.00	—	94.70	5.30	—	100.00	
3. operatives and artisans	0.61	56.78	37.38	5.23	100.00	—	3.79	55.45	40.76	100.00	0.57	52.82	38.73	7.88	100.00	
4. washerman, barber, cook	—	33.97	57.75	8.28	100.00	—	44.93	9.78	45.29	100.00	—	38.02	40.02	21.96	100.00	
5. cultivator	1.51	0.84	68.42	29.23	100.00	—	—	20.17	79.83	100.00	1.17	0.65	57.56	40.62	100.00	
6. agricultural labour	0.69	94.58	3.96	0.77	100.00	—	91.96	4.98	3.06	100.00	0.39	93.45	4.40	1.76	100.00	
7. forestry, fishery, livestock workers	—	17.48	74.22	8.30	100.00	—	—	37.65	62.35	100.00	—	12.69	64.19	23.12	100.00	
8. manufacturer of food products	—	34.30	60.80	4.90	100.00	—	35.61	27.32	37.07	100.00	—	34.71	50.31	14.98	100.00	
9. manufacturer of textiles	1.53	76.50	17.52	4.45	100.00	—	60.20	19.73	20.07	100.70	1.08	71.71	18.17	9.04	100.00	
10. hawker	—	2.89	93.74	3.37	100.00	—	57.89	42.11	—	100.00	—	5.30	91.47	3.22	100.00	
11. retailer	3.01	1.42	82.10	13.47	100.00	—	—	65.41	34.59	100.00	2.71	1.28	80.42	15.59	100.00	
12. wholesaler and financial operator	4.04	38.72	49.17	8.07	100.00	—	—	100.00	—	100.00	3.96	38.02	50.09	7.93	100.00	
13. unskilled labour	0.93	83.78	14.46	0.83	100.00	—	87.46	11.45	1.09	100.00	0.70	85.12	13.37	0.92	100.00	
14. all occupations <sup>1</sup> (number of sample persons)	1.39	54.44	37.62	6.55	100.00 (2,111)	0.28	53.16	18.98	27.58	100.00 (2,111)	1.15	54.20	33.83	10.82	100.00 (2,111)	

<sup>1</sup> Includes occupations not listed.

TABLE (8.6.7)3: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN  
OCCUPATION: ALL-INDIA ESTIMATED PERSONS  
(NSS 7th round: 951 villages and 441 urban blocks)

occupation	male										female					total	
	activity status					activity status					activity status					activity status	
	emplo- yer	emplo- yee	own accoun- t holder	unpaid house- hold labour	total	emplo- yer	emplo- yee	own accoun- t holder	unpaid house- hold labour	total	emplo- yer	emplo- yee	own accoun- t holder	unpaid house- hold labour	total	emplo- yer	own accoun- t holder
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1. medical work	2.53	43.88	51.48	2.11	100.00	—	47.37	52.63	—	100.00	1.81	44.88	51.81	1.50	100.00	—	—
2. teaching	—	98.21	1.79	—	100.00	—	100.00	—	—	100.00	—	98.74	1.26	—	100.00	—	—
3. administrative and technical work	1.25	60.42	25.67	12.66	100.00	1.72	3.85	28.80	65.63	100.00	1.37	46.15	26.46	26.02	100.00	—	—
4. peon, cleaner, scavenger	0.15	95.33	4.29	0.23	100.00	—	84.91	13.38	1.71	100.00	0.12	93.30	6.06	0.52	100.00	—	—
5. operatives and artisans	0.35	38.95	52.36	8.34	100.00	0.68	16.84	42.36	40.12	100.00	0.41	35.01	50.58	14.00	100.00	—	—
6. washerman, barber, cook	—	34.27	57.81	7.92	100.00	0.43	43.29	15.79	40.49	100.00	0.15	37.51	42.74	19.60	100.00	—	—
7. farmer	36.52	0.71	44.84	17.93	100.00	36.56	0.91	20.34	42.19	100.00	36.52	0.76	39.27	23.45	100.00	—	—
8. cultivator	0.61	0.57	70.95	27.87	100.00	0.10	0.81	14.88	84.21	100.00	0.45	0.65	53.17	45.73	100.00	—	—
9. share-cropper	0.41	0.83	71.84	26.92	100.00	0.25	0.76	11.76	87.23	100.00	0.38	0.81	57.05	41.76	100.00	—	—
10. agricultural labour	0.20	92.80	6.39	0.61	100.00	—	86.54	8.58	4.88	100.00	0.11	89.93	7.39	2.57	100.00	—	—
11. forestry, fishery, livestock workers	0.59	33.31	27.79	38.31	100.00	0.24	21.26	23.38	55.12	100.00	0.50	30.28	26.68	42.54	100.00	—	—
12. manufacturer of food products	0.34	30.69	59.51	9.46	100.00	—	30.59	33.33	36.08	100.00	0.18	30.64	46.89	22.29	100.00	—	—
13. manufacturer of textiles	0.75	58.67	33.72	6.86	100.00	—	11.65	55.77	32.58	100.00	0.35	33.49	45.53	20.63	100.00	—	—
14. building industry worker	1.57	68.01	30.42	—	100.00	—	42.11	15.79	42.10	100.00	1.46	66.22	29.40	2.92	100.00	—	—
15. hawker	1.22	1.92	91.49	5.37	100.00	—	5.70	84.79	9.51	100.00	0.96	2.72	90.08	6.24	100.00	—	—
16. retailer	2.33	1.61	81.51	14.55	100.00	—	1.77	65.63	32.60	100.00	2.00	1.63	79.31	17.06	100.00	—	—
17. wholesaler and financial operator	3.51	34.28	54.52	7.69	100.00	—	—	100.00	—	100.00	3.32	32.48	56.91	7.29	100.00	—	—
18. unskilled labour	0.32	82.60	16.08	1.00	100.00	0.37	83.61	12.34	3.68	100.00	0.34	82.97	14.71	1.98	100.00	—	—
19. all occupations <sup>1</sup> (number of sample persons)	1.79	31.45	48.52	18.24	100.00	0.90	33.90	17.33	47.87	100.00	1.50	32.24	38.39	27.87	100.00	—	—
					(14,123)					(6,768)					(20,891)		

<sup>1</sup> Includes occupations not listed.



TABLE (9.1.21): AVERAGE DAYS OF WORK IN THE PRIMARY AND ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY BY PRIMARY ACTIVITY STATUS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN SAMPLE MALES

(NSS 5th round: 939 villages and 405 urban blocks;

NSS 6th round: 949 villages and 438 urban blocks)

activity status	sector	sample	5th round			6th round			combined		
			average days of work in primary all occupations	average days of work in sample persons	number of sample persons	average days of work in primary all occupations	average days of work in sample persons	number of sample persons	average days of work in primary all occupations	average days of work in sample persons	number of sample persons
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. employer	rural	1	22.41	28.59	123	20.31	27.31	35	21.94	28.31	154
2. "	"	2	22.35	29.22	101	22.48	27.73	56	22.40	28.69	157
3. "	"	combined	22.38	28.87	224	21.65	27.58	91	22.17	28.50	315
4. "	urban	1	22.42	26.71	28	23.14	35.64	7	22.56	28.50	35
5. "	"	2	22.42	27.98	43	25.75	27.92	12	23.15	27.97	55
6. "	"	combined	22.42	27.48	71	24.79	30.77	19	22.92	28.17	90
7. employee	rural	1	20.59	24.22	1,877	19.69	23.21	978	20.28	23.87	2,855
8. "	"	2	20.36	23.31	1,900	19.36	22.61	967	20.02	23.07	2,807
9. "	"	combined	20.47	23.70	3,777	19.53	22.92	1,945	20.15	23.43	5,722
10. "	urban	1	23.59	33.61	1,368	22.70	25.66	624	23.31	30.49	1,992
11. "	"	2	24.50	32.86	1,477	23.92	25.07	642	24.32	30.50	2,119
12. "	"	combined	24.06	33.28	2,845	23.32	24.39	1,266	23.83	30.50	4,111
13. own account worker and unpaid household labour	rural	1	21.20	27.13	4,442	19.40	24.86	2,357	20.58	26.34	6,799
14. "	"	2	20.80	26.81	4,633	20.10	25.27	2,351	20.56	26.29	6,984
15. "	"	combined	21.00	26.97	9,075	19.75	25.07	4,708	20.57	26.32	13,783
16. "	urban	1	23.39	26.35	1,031	21.90	24.06	442	23.08	25.66	1,473
17. "	"	2	24.40	26.73	801	24.45	26.50	394	24.42	26.65	1,195
18. "	"	combined	23.95	26.52	1,832	23.10	25.21	836	23.68	26.11	2,668
19. all activity status	rural	1	21.04	26.27	6,442	19.49	24.41	3,370	20.51	26.63	9,812
20. "	"	2	20.69	25.84	6,634	19.93	24.55	3,374	20.43	26.41	10,008
21. "	"	combined	20.87	26.05	13,076	19.71	24.48	6,744	20.48	26.52	19,820
22. "	urban	1	23.58	25.40	2,427	22.38	23.91	1,073	23.21	24.94	3,500
23. "	"	2	23.43	25.88	2,321	24.13	25.64	1,048	24.34	25.81	3,369
24. "	"	combined	23.90	25.63	4,748	23.24	24.76	2,121	23.76	25.36	6,869

TABLE (9.1.2) : AVERAGE DAYS OF WORK IN THE PRIMARY AND ALL OCCUPATIONS OUT OF 30 DAYS INCLUDING THE DAYS OF SURVEY BY PRIMARY ACTIVITY STATUS, FROM TWO INDEPENDENT SAMPLES, ALL INDIA TOTAL AND URBAN SAMPLE FEMALES

(NSS 5th round : 939 villages and 405 urban blocks;  
NSS 6th round : 949 villages and 438 urban blocks)

activity status	sector	sample	5th round			6th round			total		
			average days of work in primary occupation	average days of work in all occupations	number of sample persons	average days of work in primary occupation	average days of work in all occupations	number of sample persons	average days of work in primary occupation	average days of work in all occupations	number of sample persons
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. employer	rural	1	17.87	28.05	30	15.56	31.95	9	17.34	28.95	29
2. "	"	2	14.81	21.48	21	6.50	6.50	6	12.96	18.15	27
3. "	"	combined	16.61	25.34	51	11.93	21.76	15	15.55	24.53	66
4. "	urban	1	15.00	18.00	2	0.00	10.00	1	10.00	15.33	4
5. "	"	2	3.33	3.33	3	30.00	30.00	1	10.00	10.00	4
6. "	"	combined	8.00	9.20	5	15.00	20.00	2	10.00	12.20	7
7. employee	rural	1	12.55	14.98	1,170	10.51	12.64	554	11.89	14.23	1,724
8. "	"	2	12.57	14.78	1,284	10.49	12.32	572	11.93	14.02	1,836
9. "	"	combined	12.56	14.88	2,454	10.50	12.48	1,126	11.91	14.13	3,560
10. "	urban	1	19.49	20.11	289	17.34	17.62	128	18.83	19.36	417
11. "	"	2	20.50	20.88	474	21.48	22.63	149	20.73	21.30	623
12. "	"	combined	20.11	20.58	763	19.57	20.32	277	19.97	20.51	1,040
13. own account worker and unpaid household labour	rural	1	14.59	18.08	2,595	14.46	17.55	1,257	14.55	17.91	3,852
14. "	"	2	15.01	19.28	2,753	15.42	19.19	1,308	15.14	19.25	4,061
15. "	"	combined	14.80	18.70	5,348	14.95	18.39	2,565	14.80	18.60	7,913
16. "	urban	1	17.01	18.46	260	22.33	24.51	89	18.37	20.00	349
17. "	"	2	21.47	22.83	317	20.11	20.74	91	21.17	22.36	408
18. "	"	combined	19.46	20.86	577	21.20	22.57	180	19.88	21.27	757
19. all activity status	rural	1	13.98	17.19	3,795	13.27	16.13	1,820	13.75	16.85	5,615
20. "	"	2	14.24	17.88	4,058	13.90	17.07	1,886	14.13	17.62	5,941
21. "	"	combined	14.11	17.54	7,853	13.59	16.60	3,706	13.94	17.24	11,559
22. "	urban	1	18.30	19.33	551	19.30	20.37	218	18.58	19.62	769
23. "	"	2	20.82	21.59	794	21.00	21.95	241	20.86	21.67	1,035
24. "	"	combined	19.79	20.67	1,345	20.19	21.20	459	19.89	20.80	1,804

TABLE (9.1.23): AVERAGE DAYS OF WORK IN THE PRIMARY AND ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY BY PRIMARY ACTIVITY STATUS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN SAMPLE PERSONS

(NSS 5th round : 939 villages and 405 urban blocks;  
NSS 6th round : 949 villages and 438 urban blocks)

activity status	sector	sample	5th round				6th round				combined			
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			average days of work in primary occupation	average days of work in all occupations	number of persons in sample	average days of work in primary occupation	average days of work in all occupations	number of persons in sample	average days of work in primary occupation	average days of work in all occupations	number of persons in sample	average days of work in primary occupation	average days of work in all occupations	number of persons in sample
1. employer	rural	1	21.52	28.54	1,53	19.34	28.26	44	20.94	28.48	107	21.03	28.48	107
2. "	"	2	21.05	27.88	1,22	20.94	27.68	62	20.94	27.68	107	21.03	27.68	107
3. "	"	combined	21.31	28.22	275	20.27	28.76	166	20.27	28.76	166	21.02	28.1	166
4. "	urban	1	21.94	26.13	30	20.25	30.44	8	20.25	30.44	8	21.25	30.44	8
5. "	"	2	21.17	26.37	46	20.08	28.08	13	20.08	28.08	13	21.20	28.08	13
6. "	"	combined	21.47	26.25	76	20.16	29.74	21	20.16	29.74	21	21.23	28.56	21
7. employees	rural	1	17.50	20.79	3,047	16.36	19.38	1,043	16.36	19.38	1,043	17.11	19.38	1,043
8. "	"	2	17.22	19.98	3,184	16.06	18.78	1,029	16.06	18.78	1,029	16.91	18.78	1,029
9. "	"	combined	17.36	20.23	6,231	16.22	19.09	2,072	16.22	19.09	2,072	16.91	18.91	2,072
10. "	urban	1	21.88	23.86	1,007	21.79	21.61	343	21.79	21.61	343	22.34	21.61	343
11. "	"	2	23.63	24.37	1,601	21.45	24.61	643	21.45	24.61	643	22.33	24.61	643
12. "	"	combined	24.24	24.69	2,608	22.64	23.64	1,043	22.64	23.64	1,043	21.9	24.1	1,043
13. own account worker and unpaid household labour	rural	1	18.56	23.89	7,041	17.66	22.37	2,611	17.66	22.37	2,611	18.30	22.37	2,611
14. "	"	2	18.61	24.01	7,886	18.43	23.19	2,611	18.43	23.19	2,611	18.33	23.19	2,611
15. "	"	combined	18.69	23.96	14,927	18.06	22.73	5,222	18.06	22.73	5,222	18.48	22.73	5,222
16. "	urban	1	21.96	24.56	1,291	21.97	24.12	418	21.97	24.12	418	22.18	24.12	418
17. "	"	2	22.67	24.69	1,118	20.63	25.62	1,876	20.63	25.62	1,876	21.6	25.62	1,876
18. "	"	combined	22.32	24.63	2,409	21.30	24.87	2,294	21.30	24.87	2,294	21.84	24.87	2,294
19. all activity status	rural	1	18.62	22.77	10,087	17.31	21.46	3,222	17.31	21.46	3,222	18.11	21.46	3,222
20. "	"	2	18.24	22.81	10,669	17.77	21.87	3,222	17.77	21.87	3,222	18.11	21.87	3,222
21. "	"	combined	18.43	22.86	20,756	17.54	21.69	6,444	17.54	21.69	6,444	18.11	21.69	6,444
22. "	urban	1	22.60	23.27	1,208	20.86	23.41	418	20.86	23.41	418	22.33	23.41	418
23. "	"	2	23.01	24.86	1,113	21.60	24.96	1,876	21.60	24.96	1,876	22.33	24.96	1,876
24. "	"	combined	22.86	24.56	2,321	21.23	24.18	2,294	21.23	24.18	2,294	22.33	24.18	2,294



TABLE (9.2.5). AVERAGE DAYS OF WORK IN THE PRIMARY AND ALL OCCUPATIONS  
OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY BY SEX FOR SELECTED  
PRIMARY OCCUPATION GROUPS, FROM TWO INDEPENDENT SAMPLES:  
ALL-INDIA RURAL SAMPLE PERSONS

(NSS 5th round : 939 villages)

primary occupation	sample	average days of work in the primary occupation			average days of work in all occupations			number of sample persons
		male	female	total	male	female	total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. farmer	1	23.14	16.67	21.27	30.04	21.14	27.47	301
2. "	2	20.66	17.49	19.90	28.14	22.10	26.59	373
3. "	combined	21.73	17.08	20.51	28.96	21.42	26.98	674
4. cultivator	1	21.08	15.89	19.26	27.14	20.46	24.79	4,548
5. "	2	20.88	15.03	18.77	26.87	19.38	24.17	4,705
6. "	combined	20.98	15.45	19.01	27.01	19.91	24.48	9,253
7. share-cropper	1	19.35	17.02	18.72	27.54	20.30	25.58	620
8. "	2	19.26	15.62	18.14	28.06	21.78	26.13	690
9. "	combined	19.30	16.24	18.41	27.81	21.13	25.86	1,310
10. agricultural labour	1	17.13	11.00	14.12	21.64	13.58	17.68	1,984
11. "	2	16.60	10.49	13.52	20.42	12.69	16.52	2,115
12. "	combined	16.86	10.74	13.81	21.02	13.13	17.08	4,099
13. all occupations <sup>1</sup>	1	21.04	13.98	18.43	26.27	17.19	22.92	10,237
14. "	2	20.69	14.24	18.24	25.84	17.88	22.81	10,692
15. "	combined	20.87	14.11	18.33	26.05	17.54	22.86	20,929

<sup>1</sup> Includes occupations not listed.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 2.2 (b). AVERAGE DAYS OF WORK IN THE PRIMARY AND ALL OCCUPATIONS  
OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY BY SEX AND SELECTED  
PRIMARY OCCUPATION GROUPS, FROM TWO INDEPENDENT SAMPLES  
ALL-INDIA RURAL SAMPLE PERSONS

(NSS 6th round : 939 villages)

primary occupation	sample	average days of work in the primary occupation			average days of work in all occupations			total persons
		male	female	total	male	female	total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. farmer	1	18.79	12.20	16.66	25.44	16.25	22.75	171
2. "	2	22.12	11.79	19.61	27.22	13.25	23.63	177
3. "	combined	20.54	12.01	18.26	26.38	14.66	23.29	348
4. cultivator	1	19.22	13.11	17.03	34.75	16.52	21.81	2,869
5. "	2	20.04	14.74	18.14	25.55	18.70	23.10	2,404
6. "	combined	19.63	13.93	17.59	25.15	17.62	22.47	4,773
7. share-cropper	1	18.66	18.04	18.49	26.00	23.21	25.25	296
8. "	2	19.32	14.56	17.81	26.19	18.01	23.60	322
9. "	combined	18.99	16.06	18.14	26.09	20.28	24.40	618
10. agricultural labour	1	17.88	8.05	13.79	21.59	10.16	16.83	1,087
11. "	2	18.09	8.30	14.01	21.92	10.24	17.05	1,096
12. "	combined	17.99	8.18	13.90	21.76	10.20	16.94	2,183
13. forestry, fishery, livestock workers	1	25.82	20.86	24.55	28.50	24.68	27.62	387
14. "	2	25.18	21.13	23.75	27.06	24.48	26.15	356
15. "	combined	25.54	21.01	24.17	27.86	24.56	26.87	743
16. all occupations <sup>1</sup>	1	19.49	13.27	17.31	24.41	16.13	21.50	5,190
17. "	2	19.93	13.90	17.77	24.55	17.07	21.87	5,260
18. "	combined	19.71	13.59	17.54	24.48	16.60	21.69	10,450

<sup>1</sup> Includes occupations not listed.

TABLE 100. AVERAGE DAYS OF WORK IN THE PRIMARY AND ALL OCCUPATIONS  
BY SEX AND AGES FORMED BY THE DATE OF SURVEY BY SEX FOR SELECTED  
OCCUPATIONS (BASED ON TWO INDEPENDENT SAMPLES)  
ALL-INDIA URBAN SAMPLE PERSONS

(NBS 5th round: 406 urban blocks)

		average days of work in the primary occupations			average days of work in all occupations			number of persons
		male	female	total	male	female	total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. cultivator	1	23.42	26.78	24.25	29.83	30.28	28.90	123
2. "	2	24.98	31.71	28.53	30.12	34.06	27.44	169
3. "	combined	24.37	23.69	23.83	29.98	35.26	28.47	292
4. agricultural labour	1	17.78	9.41	13.78	30.26	10.73	15.71	159
5. "	2	17.36	11.69	13.37	19.83	12.54	14.74	192
6. "	combined	17.57	10.86	13.56	20.08	11.88	15.16	251
7. construction of houses	1	20.25	16.35	18.97	21.15	17.35	19.90	184
8. "	2	24.11	23.56	23.91	25.66	23.78	24.90	490
9. "	combined	23.10	21.87	22.67	24.40	23.27	23.71	654
10. administrative work	1	25.80	23.80	25.83	26.84	23.80	26.80	353
11. "	2	26.12	25.60	26.10	26.58	25.60	26.55	337
12. "	combined	25.98	25.00	25.96	26.71	25.00	26.67	690
13. all occupations	1	23.58	18.30	22.60	25.40	19.33	24.27	2,978
14. "	2	24.43	20.82	23.51	25.88	21.59	24.80	3,115
15. "	combined	23.99	19.79	23.06	25.63	20.67	24.53	6,093

1 Includes occupations not listed.



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 24.01. AVERAGE DAYS OF WORK IN THE PRIMARY AND SECONDARY SECTORS  
OUT OF 30 DAYS POSSIBLE FOR MEN OF 15 YEARS OF AGE AND OVER, 1955

PRIMARY OCCUPATIONS (EXCEPT FROM THE AGRICULTURAL SECTOR)

ALL INDIA (URBAN AND RURAL TOGETHER)

NBS 6th Census, 1955 (Urban Areas)

primary occupation	sample	average days of work in the primary sector			average days of work in the secondary sector			total days possible
		total	male	female	total	male	female	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. administrative and technical work	1	24.00	27.23	24.14	26.70	27.23	26.72	100
2. "	2	24.43	24.00	24.66	25.20	24.00	25.23	100
3. "	combined	24.29	25.11	24.20	25.24	25.11	25.92	200
4. peon, cleaner, scavenger	1	26.35	26.36	26.27	26.93	26.36	27.00	90
5. "	2	25.76	27.26	26.25	27.62	27.26	27.65	141
6. "	combined	26.08	27.78	26.27	27.21	27.75	27.31	232
7. operatives and artisans	1	21.54	20.42	21.48	22.75	20.42	22.60	100
8. "	2	22.65	20.55	22.35	24.70	20.75	24.22	220
9. "	combined	22.00	20.50	22.44	22.74	20.65	22.00	440
10. forestry, fishery, livestock workers	1	24.35	27.60	20.31	26.53	25.60	26.26	62
11. "	2	22.52	22.72	22.26	26.13	25.16	26.04	26
12. "	combined	24.06	26.26	24.70	26.76	27.55	26.27	107
13. manufacturer of textiles	1	20.52	22.97	21.17	21.20	22.97	22.04	211
14. "	2	22.77	24.75	22.90	26.17	24.75	25.07	85
15. "	combined	21.55	23.45	22.05	22.83	23.46	22.90	176
16. retailer	1	24.00	19.36	23.26	26.00	19.36	25.46	97
17. "	2	26.81	24.00	26.71	28.80	24.00	28.43	66
18. "	combined	25.40	20.25	24.94	27.80	20.25	26.85	163
19. wholesaler and financial operator	1	24.83	32.00	25.24	26.43	42.00	26.50	42
20. "	2	25.70	20.00	25.20	26.00	20.00	26.22	43
21. "	combined	25.26	25.50	25.27	25.61	25.50	26.36	85
22. all occupations <sup>1</sup>	1	22.38	19.30	21.86	23.91	20.37	23.31	1,291
23. "	2	24.12	21.00	23.55	25.64	21.05	24.96	1,250
24. "	combined	23.24	20.19	22.70	24.76	21.20	24.13	2,540

<sup>1</sup> Includes occupations not listed.

TABLE 9.161 AVERAGE DAYS OF WORK IN ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY FOR SELECTED PRIMARY OCCUPATION GROUPS IN THE RURAL POPULATION ZONES, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL SAMPLE MALES

(NSS 6th round : 949 villages)

primary occupation	sample	rural zone							number of sample persons rural
		north	east	south	west	central	north-west	all-India rural	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. farmer	1	29.87	25.00	23.90	26.37	23.79	17.75	25.44	121
2. "	2	29.64	24.78	22.76	29.37	27.73	40.62	27.22	134
3. "	combined	29.78	24.87	23.33	28.43	25.40	33.00	26.38	255
4. cultivator	1	29.13	23.16	25.73	24.58	21.47	24.18	24.75	1,521
5. "	2	27.92	22.07	28.07	25.94	23.75	26.71	25.55	1,540
6. "	combined	28.47	22.62	26.85	25.18	22.67	25.48	25.15	3,061
7. share-cropper	1	21.78	22.19	32.49	23.97	29.55	32.90	26.00	217
8. "	2	20.50	23.17	26.11	29.10	31.22	27.93	26.19	220
9. "	combined	21.16	22.61	28.84	27.03	30.35	30.27	26.09	437
10. agricultural labour	1	23.24	23.31	18.38	22.13	21.65	21.79	21.59	623
11. "	2	25.90	23.09	18.09	20.35	23.37	22.25	21.92	639
12. "	combined	24.49	23.20	18.24	21.08	22.53	21.99	21.76	1,262
13. forestry, fishery, livestock workers	1	27.22	28.91	26.90	31.51	28.14	28.35	28.50	288
14. "	2	27.64	26.45	27.89	26.70	25.88	29.48	27.06	230
15. "	combined	27.35	27.78	27.40	30.05	26.99	28.88	27.86	518
16. manufacturer of food products	1	21.33	17.42	38.43	31.67	38.00	21.33	27.54	25
17. "	2	24.07	22.46	25.55	25.00	32.00	17.34	23.56	45
18. "	combined	23.61	21.02	31.18	29.00	36.50	19.34	24.99	70
19. operatives and artisans	1	24.85	27.00	23.74	27.20	21.89	21.85	24.19	177
20. "	2	25.88	21.21	14.45	23.70	19.72	18.05	20.13	167
21. "	combined	25.26	23.48	19.85	24.89	21.12	20.20	22.22	344
22. unskilled labour	1	29.36	22.18	24.24	18.60	21.67	27.81	23.90	79
23. "	2	22.50	24.04	21.00	15.64	28.75	22.98	21.79	78
24. "	combined	27.89	23.23	22.57	17.35	25.72	25.15	22.85	157
25. all occupations <sup>1</sup>	1	27.03	23.51	23.43	24.81	23.50	25.16	24.41	3,370
26. "	2	27.08	22.98	23.31	25.10	24.09	26.36	24.55	3,374
27. "	combined	27.05	23.24	23.37	24.96	23.80	25.76	24.48	6,744

<sup>1</sup> Includes occupations not listed.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9.1.6.2 AVERAGE DAYS OF WORK IN ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY FOR SELECTED PRIMARY OCCUPATION GROUPS IN THE RURAL POPULATION ZONES, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL SAMPLE FEMALES

(NSS 6th round: 949 villages)

primary occupation	sample	rural zone						all India rural	number of sample persons
		north	east	south	west	central	north west		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. farmer	1	18.27	20.00	10.46	18.36	11.17	21.00	16.25	80
2. "	2	20.67	12.50	12.86	10.39	9.00	21.67	12.25	43
3. "	combined	19.12	17.86	11.35	12.88	10.00	21.40	14.86	93
4. cultivator	1	20.30	9.06	19.21	17.99	12.80	20.24	16.52	848
5. "	2	22.22	14.10	20.59	17.85	14.25	18.79	18.70	864
6. "	combined	24.55	11.72	19.93	17.92	14.03	19.43	17.62	1,712
7. share-cropper	1	0.00	17.51	23.20	21.60	12.18	22.54	22.21	79
8. "	2	14.23	11.12	17.23	18.55	4.00	25.22	18.01	102
9. "	combined	12.80	14.44	24.72	19.76	10.63	28.06	20.28	181
10. agricultural labour	1	10.84	9.83	10.73	10.94	8.82	11.23	10.16	444
11. "	2	4.55	10.79	9.92	12.20	9.27	14.00	10.24	457
12. "	combined	7.95	10.27	10.34	12.03	9.07	12.26	10.20	901
13. forestry, fishery, livestock workers	1	26.35	21.94	24.43	27.42	22.53	25.00	24.68	99
14. "	2	35.24	19.48	30.28	29.34	15.93	28.00	24.48	126
15. "	combined	30.44	20.43	27.35	28.30	18.22	26.93	24.56	225
16. manufacturer of food products	1	25.22	18.54	17.67	—	16.75	—	19.27	46
17. "	2	25.50	24.56	18.80	12.00	—	20.00	22.21	43
18. "	combined	25.41	20.64	18.33	12.00	16.75	20.00	21.22	89
19. operatives and artisans	1	12.17	22.11	20.08	27.50	24.17	20.33	20.40	65
20. "	2	28.00	25.25	14.50	24.07	12.56	0.00	19.62	84
21. "	combined	18.50	24.33	18.07	27.06	17.54	15.25	20.02	129
22. unskilled labour	1	29.25	24.00	22.14	15.50	23.33	32.50	23.72	40
23. "	2	24.70	26.09	20.70	28.10	17.85	12.25	22.53	59
24. "	combined	26.00	25.05	21.29	22.50	18.87	24.40	23.01	99
25. all occupations <sup>1</sup>	1	19.42	12.62	16.19	17.40	13.43	20.87	16.13	1,820
26. "	2	25.45	14.84	15.94	17.49	12.89	20.27	17.07	1,886
27. "	combined	22.53	13.75	16.07	17.44	13.14	20.55	16.60	3,706

<sup>1</sup> Includes occupations not listed.



TABLE 100: AVERAGE DAYS OF WORK IN ALL OCCUPATIONS OUT OF 30 DAYS  
 PRECEDING THE DATE OF SURVEY FOR SELECTED PRIMARY OCCUPATION GROUPS  
 IN THE RURAL POPULATION ZONES, FROM TWO INDEPENDENT  
 SAMPLES: ALL-INDIA RURAL SAMPLE PERSONS

(NSS 6th round: 949 villages)

primary occupation	sample	rural zone						all- India rural	number of sample persons
		north	east	south	west	central	north- west		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. farmer	1	26.60	24.22	19.54	21.88	21.42	22.17	22.75	171
2. "	2	27.39	24.22	20.59	21.23	22.48	38.18	23.82	177
3. "	combined	26.90	24.22	20.02	21.47	21.89	32.53	23.29	348
4. cultivator	1	26.39	19.22	23.86	21.59	18.11	22.79	21.81	2,369
5. "	2	28.01	19.63	25.64	22.33	19.89	23.66	23.10	2,404
6. "	combined	27.27	19.42	24.74	21.91	19.03	23.24	22.47	4,773
7. share-cropper	1	20.33	21.58	32.75	22.96	22.69	33.08	25.25	296
8. "	2	17.93	21.28	23.21	24.54	27.33	26.85	23.60	322
9. "	combined	18.90	21.45	27.42	23.91	24.50	29.51	24.40	618
10. agricultural labour	1	19.63	19.11	14.65	16.21	15.69	18.59	16.83	1,067
11. "	2	20.08	18.70	14.10	17.51	16.29	20.14	17.05	1,096
12. "	combined	19.85	18.88	14.39	16.90	16.01	19.23	16.94	2,163
13. forestry, fishery, livestock workers	1	26.91	27.54	26.26	30.47	26.81	27.59	27.52	387
14. "	2	31.52	24.29	28.49	27.75	22.30	28.94	26.15	356
15. "	combined	28.64	25.92	27.40	29.52	24.32	28.30	26.87	743
16. manufacturer of food products	1	24.25	18.35	32.20	31.67	25.85	21.33	22.25	71
17. "	2	24.85	23.54	23.14	17.20	32.00	20.50	23.39	88
18. "	combined	24.69	20.76	26.92	22.63	26.62	20.85	22.88	159
19. operatives and artisans	1	22.47	25.85	22.14	28.29	22.28	21.70	23.17	242
20. "	2	26.28	22.54	14.46	23.76	17.33	17.19	19.99	231
21. "	combined	23.97	23.74	19.11	25.22	20.26	19.80	21.62	473
22. unskilled labour	1	29.33	22.86	23.60	17.52	22.50	29.22	23.85	119
23. "	2	24.20	24.69	20.89	21.58	20.41	20.93	22.11	137
24. "	combined	27.34	23.85	22.14	19.46	20.95	24.98	22.92	256
25. all occupations <sup>1</sup>	1	24.64	20.28	20.72	21.60	19.59	23.83	21.50	5,190
26. "	2	26.55	20.49	20.56	22.01	19.51	24.24	21.87	5,260
27. "	combined	25.61	20.38	20.65	21.79	19.55	24.04	21.69	10,450

<sup>1</sup> Includes occupations not listed.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (9.5.6): AVERAGE DAYS OF WORK IN ALL OCCUPATIONS OUT OF 30 DAYS PRECEDING THE DATE OF SURVEY FOR SELECTED PRIMARY OCCUPATION GROUPS IN THE URBAN POPULATION SIZE CLASSES OF TOWNS FROM TWO INDEPENDENT SAMPLES: ALL-INDIA URBAN SAMPLE PERSONS

(NBS 6th round: 438 urban blocks)

primary occupation	sample	urban size class						number of persons
		15,000 <	50,000 <	100,000 <	150,000 <	200,000 <	250,000 <	
		15,000	50,000	100,000	150,000	200,000	250,000	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. administrative and technical work	1	26.57	30.00	30.24	25.30	25.71	25.72	190
2. "	2	26.13	26.88	26.11	25.65	24.19	24.23	190
3. "	combined	27.16	28.27	22.54	25.51	25.07	25.52	380
4. peon, cleaner, scavenger	1	28.36	27.60	19.90	28.98	27.28	26.09	80
5. "	2	26.46	27.75	24.53	26.61	29.12	27.45	143
6. "	combined	27.23	23.27	22.82	27.21	27.87	27.31	232
7. operatives and artisans	1	24.04	21.58	23.18	21.51	22.80	25.02	218
8. "	2	25.06	24.95	26.72	22.77	23.20	24.22	228
9. "	combined	24.73	23.12	24.31	22.63	23.03	23.49	446
10. agricultural labour	1	15.48	8.66	16.67	25.75	—	15.22	83
11. "	2	21.43	18.27	26.67	15.00	—	21.01	87
12. "	combined	18.85	13.02	20.67	21.60	—	16.24	170
13. manufacturer of textiles	1	—	20.90	22.23	22.07	25.90	22.04	121
14. "	2	40.00	20.63	24.42	25.00	25.09	25.07	55
15. "	combined	40.00	20.86	23.00	23.06	25.48	22.90	176
16. retailer	1	23.38	26.26	25.50	22.92	26.95	25.46	97
17. "	2	30.00	27.26	26.83	25.96	29.52	28.42	86
18. "	combined	24.64	26.86	26.03	26.68	29.24	26.95	183
19. wholesaler and financial operator	1	0.00	28.09	26.62	36.50	24.06	26.80	42
20. "	2	30.00	23.14	29.16	24.80	26.28	26.22	43
21. "	combined	24.00	26.16	27.71	28.69	25.18	26.56	85
22. unskilled labour	1	14.63	18.57	21.71	19.92	19.30	18.88	114
23. "	2	22.93	23.08	23.45	25.13	24.37	24.04	145
24. "	combined	18.00	21.03	22.65	23.25	22.21	21.87	259
25. all occupations <sup>1</sup>	1	21.54	22.34	23.72	23.54	24.80	23.31	1,291
26. "	2	24.55	24.05	25.02	25.46	25.36	24.96	1,280
27. "	combined	23.24	23.14	24.22	24.57	25.07	24.13	2,580

<sup>1</sup> Includes occupations not listed.

TABLE 263. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION BY ACTIVITY STATUS AND SEX—ALL-INDIA RURAL AND URBAN SAMPLE PERSONS

(NSS 8th round : 939 villages and 405 urban blocks)

activity status	sector	days of work				average days of work	number of sample persons
		0-9	10-19	20-above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
.1 : male							
1. employer	rural	12.94	16.07	70.99	100.00	22.38	224
2. "	urban	12.68	7.04	80.28	100.00	22.42	71
3. employee	rural	16.84	19.72	63.44	100.00	20.47	3,777
4. "	urban	5.38	9.49	85.13	100.00	24.06	2,845
5. own account worker and unpaid household labour	rural	17.94	15.36	66.70	100.00	21.00	9,075
6. "	urban	6.60	11.08	82.32	100.00	23.95	1,832
7. all employed	rural	17.54	16.63	65.83	100.00	20.87	13,076
8. "	urban	5.95	10.06	83.99	100.00	23.99	4,748
.2 : female							
1. employer	rural	33.33	15.68	50.99	100.00	16.61	51
2. "	urban	60.00	20.00	20.00	100.00	8.00	5
3. employee	rural	41.93	27.02	31.05	100.00	12.56	2,454
4. "	urban	19.00	17.17	63.83	100.00	20.11	763
5. own account worker and unpaid household labour	rural	40.47	15.24	44.29	100.00	14.80	5,348
6. "	urban	25.82	10.92	63.26	100.00	19.46	577
7. all employed	rural	40.87	18.93	40.20	100.00	14.11	7,853
8. "	urban	22.08	14.50	63.42	100.00	19.79	1,345
.3 : total							
1. employer	rural	16.72	16.00	67.28	100.00	21.31	275
2. "	urban	15.79	7.89	76.32	100.00	21.47	76
3. employee	rural	26.72	22.59	50.69	100.00	17.36	6,231
4. "	urban	8.26	11.11	80.63	100.00	23.23	3,608
5. own account worker and unpaid household labour	rural	26.29	15.31	58.40	100.00	18.69	14,423
6. "	urban	11.21	11.04	77.75	100.00	22.87	2,409
7. all employed	rural	26.29	17.49	56.22	100.00	18.33	20,929
8. "	urban	9.52	11.05	79.43	100.00	23.06	6,093



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9.6.6: PERCENTAGE DISTRIBUTION OF QUANTITATIVELY CALIBRATED POPULATION IN DAYS OF WORK GROUPS IN THE PRIMARY ACTIVITIES BY ACTIVITY STATUS AND SEX: ALL INDIA RURAL AND URBAN SAMPLE PERSONS

(N88 6th round: 849 villages and 438 urban blocks)

ACTIVITY STATUS	SEX/LOC	Days of work				Percentage population	
		0-9	10-19	20-above	total	days of work	persons
1	2	3	4	5	6	7	8
<b>1: male</b>							
1. employer	rural	12.08	15.38	73.54	100.00	21.65	91
2. "	urban	10.53	—	89.47	100.00	24.79	19
3. employee	rural	20.51	20.05	59.44	100.00	19.53	1,945
4. "	urban	7.66	11.29	81.05	100.00	22.32	1,396
5. own account worker	rural	20.15	18.41	61.44	100.00	19.55	2,923
6. "	urban	8.51	12.71	78.78	100.00	22.14	899
7. unpaid household labour	rural	19.88	18.55	61.57	100.00	20.07	1,785
8. "	urban	10.78	8.98	80.24	100.00	22.94	167
9. all employed	rural	20.07	18.88	61.05	100.00	19.71	6,144
10. "	urban	8.20	11.46	80.34	100.00	22.24	2,121
<b>2: female</b>							
1. employer	rural	60.00	6.67	33.33	100.00	11.93	15
2. "	urban	50.00	—	50.00	100.00	15.00	2
3. employee	rural	50.97	24.34	24.69	100.00	10.50	1,126
4. "	urban	20.21	18.77	61.02	100.00	19.57	277
5. own account worker	rural	30.36	18.61	50.83	100.00	16.68	361
6. "	urban	9.37	18.75	71.88	100.00	22.06	64
7. unpaid household labour	rural	37.55	20.58	41.87	100.00	14.72	2,264
8. "	urban	17.24	14.66	68.10	100.00	20.73	116
9. all employed	rural	41.14	21.51	37.35	100.00	13.20	3,506
10. "	urban	18.08	17.64	64.28	100.00	20.19	439
<b>3: total</b>							
1. employer	rural	18.87	14.15	66.98	100.00	20.27	106
2. "	urban	14.28	—	85.72	100.00	23.66	21
3. employee	rural	31.68	21.62	46.70	100.00	16.22	3,071
4. "	urban	9.92	12.64	77.44	100.00	22.64	1,543
5. own account worker	rural	21.11	18.43	60.46	100.00	19.29	3,224
6. "	urban	8.59	13.23	78.18	100.00	23.05	733
7. unpaid household labour	rural	29.76	19.68	50.56	100.00	17.08	4,049
8. "	urban	13.43	11.31	75.26	100.00	22.04	283
9. all employed	rural	27.55	19.80	52.65	100.00	17.54	10,450
10. "	urban	9.96	12.56	77.48	100.00	22.70	2,580

TABLE 674. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION—ALL INDIA RURAL  
SAMPLE PERSONS

(NSS 4th round : 938 villages)

primary occupation	days of work				average days of work	number of sample persons
	0-9	10-19	20-above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. farmer	20.29	16.93	62.78	100.00	19.12	685
2. cultivator	20.42	17.01	62.57	100.00	19.23	8,005
3. share-cropper	18.80	19.26	61.94	100.00	19.17	1,314
4. agricultural labour	35.56	26.71	37.73	100.00	14.23	3,763
5. forestry, fishery, livestock workers	10.06	9.22	80.72	100.00	23.05	835
6. all agricultural occupations	23.38	19.13	57.49	100.00	18.21	15,502
7. mining	45.24	9.52	45.24	100.00	13.36	42
8. manufacturer of food products	20.23	21.19	57.86	100.00	20.73	178
9. manufacturer of textiles	14.33	25.33	60.34	100.00	19.26	300
10. other manufacturers	20.41	21.28	58.31	100.00	18.59	343
11. construction and sanitary services	19.60	18.40	62.00	100.00	19.49	250
12. trade and commerce	12.52	16.28	71.20	100.00	21.47	479
13. transport and communication services	22.77	27.23	50.00	100.00	17.64	224
14. administrative and professional services	15.62	12.81	71.57	100.00	21.22	1,319
15. others	9.35	8.50	82.15	100.00	21.22	706
16. all non-agricultural occupations	15.62	15.78	68.60	100.00	20.71	3,841
17. all occupations	21.85	18.46	59.69	100.00	18.71	19,343

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9.7.51. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION BY SEX AND SELECTED OCCUPATION GROUPS, ALL INDIA RURAL SAMPLE SURVEY

(NSS 5th round: 939 villages)

primary occupation	sex	days of work				average days of work	number of persons
		0-9	10-19	20 and over	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. farmer	male	14.89	18.10	68.01	100.00	21.73	497
2. "	female	33.33	14.12	52.55	100.00	17.08	177
3. "	total	19.73	15.58	64.69	100.00	20.51	674
4. cultivator	male	18.05	14.83	67.12	100.00	20.96	8,940
5. "	female	37.14	16.53	46.34	100.00	15.44	3,293
6. "	total	24.85	15.43	59.73	100.00	19.01	9,233
7. share-cropper	male	19.67	22.37	57.96	100.00	19.30	930
8. "	female	34.20	19.74	46.06	100.00	16.24	380
9. "	total	23.99	21.61	54.50	100.00	18.41	1,310
10. agricultural labour	male	24.23	28.16	47.61	100.00	16.86	3,056
11. "	female	47.36	29.12	23.50	100.00	10.74	2,043
12. "	total	35.76	28.64	35.60	100.00	13.81	4,099
13. fishery worker	male	4.85	4.18	90.97	100.00	27.46	598
14. "	female	3.87	4.30	91.83	100.00	27.57	233
15. "	total	4.57	4.22	91.21	100.00	27.49	831
16. all occupations <sup>1</sup>	male	17.54	16.63	65.83	100.00	20.87	13,076
17. "	female	40.87	18.93	40.20	100.00	14.11	7,553
18. "	total	26.29	17.49	56.22	100.00	18.33	20,929

<sup>1</sup> Includes occupations not listed.



TABLE (9 7.6) PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION BY SEX FOR SELECTED OCCUPATION GROUPS: ALL-INDIA RURAL SAMPLE PERSONS

(NSS 6th round : 949 villages)

primary occupation	sex	days of work				average days of work	number of sample persons
		0-9	10-19	20-above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. farmer	male	19.21	14.51	66.28	100.00	20.54	255
2. "	female	48.39	18.28	33.33	100.00	12.01	93
3. "	total	27.01	15.52	57.47	100.00	18.26	348
4. cultivator	male	20.75	17.84	61.41	100.00	19.63	3,061
5. "	female	40.07	20.50	39.43	100.00	13.93	1,712
6. "	total	27.67	18.80	53.53	100.00	17.59	4,773
7. share-cropper	male	19.68	24.03	56.29	100.00	18.99	437
8. "	female	34.81	16.57	48.62	100.00	16.08	181
9. "	total	24.11	21.85	54.04	100.00	18.14	618
10. agricultural labour	male	24.33	22.90	52.77	100.00	17.99	1,262
11. "	female	59.05	25.08	15.87	100.00	8.18	901
12. "	total	38.80	23.81	37.39	100.00	13.90	2,163
13. forestry, fishery, livestock workers	male	7.14	9.46	83.40	100.00	25.54	518
14. "	female	21.78	15.11	63.11	100.00	21.01	225
15. "	total	11.58	11.17	77.25	100.00	24.17	743
16. all occupations <sup>1</sup>	male	20.07	18.88	61.05	100.00	19.71	6,744
17. "	female	41.14	21.51	37.35	100.00	13.59	3,706
18. "	total	27.55	19.80	52.65	100.00	17.54	10,450

<sup>1</sup> Includes occupations not listed.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (9.8.4): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION - ALL INDIA  
URBAN SAMPLE PERSONS

(NSS 4th round: 406 urban blocks)

primary occupation	days of work				average days of work	number of sample persons
	0-9	10-19	20-above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. farmer	28.58	16.07	55.35	100.00	16.49	56
2. cultivator	14.11	12.82	73.07	100.00	21.50	234
3. share-cropper	19.23	17.95	62.82	100.00	19.32	78
4. agricultural labour	46.34	28.66	25.00	100.00	11.73	328
5. forestry, fishery, livestock workers	4.66	8.38	86.96	100.00	21.31	215
6. all agricultural occupations	26.80	18.11	57.09	100.00	18.13	911
7. mining	—	33.33	66.67	100.00	23.00	6
8. manufacturer of food products	2.44	17.07	80.49	100.00	23.32	164
9. manufacturer of textiles	7.46	16.19	76.35	100.00	21.64	630
10. other manufacturers	8.68	17.77	73.55	100.00	21.52	242
11. construction and sanitary services	9.57	14.81	75.62	100.00	22.28	324
12. trade and commerce	5.93	8.04	86.03	100.00	24.04	759
13. transport and communication services	5.87	13.36	80.77	100.00	23.22	494
14. administrative and professional services	6.05	7.53	86.42	100.00	23.99	2,297
15. others	14.21	21.31	64.48	100.00	20.39	183
16. all non-agricultural occupations	6.71	11.02	82.27	100.00	23.25	5,099
17. all occupations	9.45	12.09	78.46	100.00	22.48	6,010

TABLE 108. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION BY SEX FOR SELECTED OCCUPATION GROUPS: ALL-INDIA URBAN SAMPLE PERSONS

(NSS 5th round: 405 urban blocks)

primary occupation	sex	days of work				average days of work	number of sample persons
		0-9	10-19	20-above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. cultivator	male	10.55	9.04	80.41	100.00	24.37	199
2. "	female	17.20	7.53	75.27	100.00	22.69	93
3. "	total	12.67	8.56	78.77	100.00	23.83	292
4. agricultural labour	male	17.02	32.63	50.35	100.00	17.57	141
5. "	female	44.76	30.48	24.76	100.00	10.86	210
6. "	total	33.61	31.34	35.05	100.00	13.56	351
7. manufacturer of textiles	male	6.38	11.82	81.80	100.00	23.10	423
8. "	female	13.85	10.82	75.33	100.00	21.87	231
9. "	total	9.02	11.47	79.51	100.00	22.67	654
10. trade and commerce	male	3.88	7.76	88.36	100.00	25.29	619
11. "	female	13.34	11.67	74.99	100.00	22.70	60
12. "	total	4.71	8.10	87.19	100.00	24.98	679
13. administrative services	male	1.93	2.22	95.85	100.00	25.98	675
14. "	female	—	6.67	93.33	100.00	25.00	15
15. "	total	1.88	2.31	95.81	100.00	25.96	690
16. professional services	male	2.74	7.85	89.41	100.00	25.08	255
17. "	female	14.55	9.09	76.36	100.00	21.25	55
18. "	total	4.84	8.07	87.09	100.00	24.40	310
19. other services	male	5.86	9.33	84.81	100.00	24.23	1,007
20. "	female	15.65	6.46	77.89	100.00	23.81	294
21. "	total	8.07	8.69	83.24	100.00	24.13	1,301
22. all occupations <sup>1</sup>	male	5.95	10.06	83.99	100.00	23.99	4,748
23. "	female	22.08	14.50	63.42	100.00	19.79	1,345
24. "	total	9.52	11.05	79.43	100.00	23.06	6,093

<sup>1</sup> Includes occupations not listed.



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9.8.6. PERCENTAGE DISTRIBUTION OF STATISTICAL HOUSEHOLD POPULATION IN DAYS OF WORK GROUPS IN THE PRIMARY OCCUPATION OF 1985 MALE ADULTS (1) OCCUPATION GROUPS: ALL-INDIA URBAN SAMPLE PERSONS

(NSS 6th round : 428 urban blocks)

primary occupation	sex	days of work			total	average days of work	number of sample persons
		0-9	10-19	20-above			
1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. administrative and technical work	male	5.94	7.01	87.05	100.00	24.28	411
2. "	female	—	11.11	88.89	100.00	25.11	9
3. "	total	5.79	7.10	87.11	100.00	24.30	390
4. peon, cleaner, scavenger	male	4.35	2.72	92.93	100.00	26.02	184
5. "	female	6.24	—	93.76	100.00	27.75	48
6. "	total	4.74	3.15	93.11	100.00	26.37	232
7. operatives and artisans	male	8.73	13.60	77.67	100.00	22.60	419
8. "	female	17.64	5.85	76.48	100.00	30.50	34
9. "	total	9.43	13.01	77.57	100.00	22.44	446
10. agricultural labour	male	17.00	19.00	64.00	100.00	19.34	100
11. "	female	44.29	31.43	24.28	100.00	10.85	70
12. "	total	38.23	24.12	47.65	100.00	16.06	170
13. forestry, fishery, livestock workers	male	7.90	9.21	82.89	100.00	24.06	75
14. "	female	6.46	6.46	87.08	100.00	26.26	31
15. "	total	7.47	8.41	84.12	100.00	24.70	107
16. manufacturer of textiles	male	6.82	16.66	76.52	100.00	21.28	132
17. "	female	—	23.73	77.27	100.00	23.45	44
18. "	total	5.12	18.18	76.70	100.00	22.05	176
19. retailer	male	4.80	5.99	89.21	100.00	25.10	167
20. "	female	25.00	12.50	62.50	100.00	20.25	16
21. "	total	6.56	6.56	86.88	100.00	24.94	183
22. wholesaler and financial operator	male	4.93	6.17	98.90	100.00	25.26	61
23. "	female	—	—	100.00	100.00	25.70	4
24. "	total	4.71	5.89	89.40	100.00	25.27	85
25. unskilled labour	male	13.04	17.94	69.02	100.00	21.38	184
26. "	female	20.00	20.00	60.00	100.00	19.83	75
27. "	total	15.06	18.53	66.41	100.00	20.93	259
28. all occupations <sup>1</sup>	male	8.20	11.46	80.34	100.00	23.24	2,121
29. "	female	18.08	17.64	64.28	100.00	20.19	459
30. "	total	9.06	12.56	77.48	100.00	22.70	2,580

<sup>1</sup>Includes occupations not listed.

TABLE 99.21. PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN DAYS OF WORK GROUPS IN THE SECONDARY OCCUPATION BY SEX FOR DAYS  
OF WORK IN THE PRIMARY OCCUPATION: ALL-INDIA RURAL  
SAMPLE PERSONS

(NBS 5th round: 939 villages; 6th round: 949 villages)

days of work in primary occupation	sex	days of work in secondary occupation								average days of work <sup>1</sup>	number of sample persons
		nil	1-4	5-9	10-14	15-19	20-24	25- above	total		
1	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. nil	male	63.60	5.43	4.70	4.02	3.66	2.92	15.67	100.00	6.55	1,915
2. "	female	86.71	2.33	2.39	1.89	1.28	0.86	4.63	100.00	2.14	3,131
3. "	total	77.94	3.51	3.21	2.70	2.18	1.64	8.82	100.00	3.81	5,046
4. 1-4	male	54.46	13.10	7.44	4.76	3.27	4.02	12.95	100.00	6.36	672
5. "	female	73.06	8.83	5.18	2.44	1.83	2.28	6.38	100.00	3.44	657
6. "	total	63.66	10.98	6.32	3.61	2.56	3.16	9.71	100.00	4.91	1,329
7. 5-9	male	56.55	9.52	9.52	6.22	4.43	5.66	8.10	100.00	5.74	1,061
8. "	female	73.81	6.34	7.50	3.06	2.32	2.22	4.75	100.00	3.20	947
9. "	total	64.69	8.02	8.57	4.73	3.44	4.03	6.52	100.00	4.54	2,008
10. 10-14	male	59.73	7.91	8.51	9.99	5.06	3.63	5.17	100.00	4.89	1,681
11. "	female	81.13	3.82	4.46	5.50	2.07	1.11	1.91	100.00	2.12	1,256
12. "	total	68.88	6.16	6.78	8.07	3.78	2.55	3.78	100.00	3.71	2,937
13. 15-19	male	59.65	6.96	9.51	10.30	9.28	1.19	3.11	100.00	4.51	1,767
14. "	female	80.04	3.70	3.60	4.48	5.75	0.29	2.14	100.00	2.40	1,027
15. "	total	67.14	5.76	7.34	8.16	7.98	0.86	2.76	100.00	3.73	2,794
16. 20-24	male	69.11	5.78	8.02	9.23	1.72	2.73	3.41	100.00	3.48	2,493
17. "	female	83.03	3.03	4.04	3.39	1.10	2.66	2.75	100.00	2.21	1,090
18. "	total	37.35	4.94	6.81	7.45	1.53	2.71	3.21	100.00	3.09	3,583
19. 25-above	male	81.36	3.14	2.16	1.89	0.87	0.68	9.90	100.00	3.55	10,231
20. "	female	83.92	2.35	1.71	0.87	0.55	0.61	9.99	100.00	3.39	3,451
21. "	total	82.00	2.94	2.05	1.63	0.79	0.66	9.93	100.00	3.51	13,682
22. total	male	72.09	5.12	4.91	4.78	2.63	1.83	8.64	100.00	4.25	19,820
23. "	female	82.50	3.38	3.23	2.47	1.64	1.13	5.65	100.00	2.70	11,559
24. "	total	75.93	4.48	4.29	3.93	2.26	1.57	7.54	100.00	3.68	31,379

<sup>1</sup> In secondary occupation.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 2.27. PERCENTAGE DISTRIBUTION OF DAYS OF WORK IN THE PRIMARY OCCUPATION, ALL INDIA URBAN SAMPLE PERSONS

(NSS 5th round: 405 urban blocks, NSS 6th round: 420 urban blocks)

Days of work		Percentage distribution of days of work										Persons	
		Nil	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54
										</			

1 In secondary occupation.



TABLE 29.51: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE SECONDARY OCCUPATION BY SEX FOR DAYS OF WORK IN THE PRIMARY OCCUPATION: ALL-INDIA RURAL SAMPLE PERSONS

(NSS 5th round : 939 villages)

days of work in primary occupation	sex	days of work in secondary occupation								average days of work <sup>1</sup>	number of sample persons
		nil	1-4	5-9	10-14	15-19	20-24	25- above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. nil	male	63.26	5.60	3.89	3.73	4.46	3.08	15.98	100.00	6.83	1,233
2. „	female	88.01	2.35	1.57	1.66	1.01	0.65	4.75	100.00	2.04	2,168
3. „	total	79.04	3.53	2.41	2.41	2.26	1.53	8.82	100.00	3.78	3,401
4. 1-4	male	50.72	14.01	7.25	5.56	3.86	4.83	13.77	100.00	7.05	414
5. „	female	70.89	8.21	6.34	3.29	1.41	2.35	7.51	100.00	3.92	426
6. „	total	60.95	11.07	6.79	4.40	2.62	3.58	10.59	100.00	5.46	840
7. 5-9	male	56.35	10.84	8.20	6.35	4.95	5.42	7.89	100.00	5.72	646
8. „	female	71.59	6.82	8.60	3.73	2.27	1.46	5.53	100.00	3.44	616
9. „	total	63.79	8.87	8.40	5.07	3.64	3.49	6.74	100.00	4.61	1,262
10. 10-14	male	58.98	8.16	8.84	10.09	5.67	3.84	4.42	100.00	4.88	1,041
11. „	female	80.89	4.19	3.94	5.67	2.10	1.11	2.10	100.00	2.18	811
12. „	total	68.57	6.43	6.70	8.15	4.10	2.65	3.40	100.00	3.70	1,852
13. 15-19	male	59.70	6.88	8.73	10.05	9.97	1.32	3.35	100.00	4.61	1,134
14. „	female	80.59	3.56	3.41	4.00	5.93	0.29	2.22	100.00	2.37	675
15. „	total	67.50	5.64	6.74	7.79	8.46	0.94	2.93	100.00	3.78	1,809
16. 20-24	male	68.96	5.63	7.07	10.33	1.75	2.82	3.44	100.00	3.57	1,598
17. „	female	83.29	1.97	4.07	3.51	1.54	2.53	3.09	100.00	2.34	712
18. „	total	73.38	4.50	6.15	8.22	1.69	2.73	3.33	100.00	3.19	2,310
19. 25-above	male	80.40	3.15	2.21	2.01	0.93	0.69	10.61	100.00	3.85	7,010
20. „	female	83.19	2.13	1.84	0.66	0.61	0.57	11.00	100.00	3.73	2,445
21. „	total	81.12	2.89	2.11	1.66	0.85	0.66	10.71	100.00	3.82	9,455
22. total	male	71.76	5.13	4.51	4.86	2.81	1.84	9.09	100.00	4.44	13,076
23. „	female	82.49	3.21	3.09	2.38	1.59	0.97	6.27	100.00	2.85	7,853
24. „	total	75.78	4.41	3.98	2.93	3.36	1.51	8.03	100.00	3.85	20,929

<sup>1</sup> In secondary occupation.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9.9.52 PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE SECONDARY OCCUPATION BY SEX FOR DAYS OF WORK IN THE PRIMARY OCCUPATION: ALL-INDIA URBAN SAMPLE PERSONS

(NSS 5th round : 405 urban blocks)

days of work in primary occupation	sex	days of work in secondary occupation								average no. of work <sup>1</sup>	number of sample persons
		nil	1-4	5-9	10-14	15-19	20-24	25-above	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. nil	male	77.16	1.85	—	1.23	4.94	2.47	12.35	100.00	4.99	162
2. „	female	96.90	—	0.52	—	1.03	0.52	1.03	100.00	0.60	194
3. „	total	87.92	0.84	0.28	0.56	2.81	1.41	6.18	100.00	2.60	356
4. 1-4	male	83.34	2.38	2.38	2.38	—	4.76	4.76	100.00	2.79	42
5. „	female	95.56	—	2.22	—	—	—	2.22	100.00	0.78	45
6. „	total	89.65	1.15	2.30	1.15	—	2.30	3.45	100.00	1.57	87
7. 5-9	male	86.07	—	5.06	1.27	2.53	1.27	3.80	100.00	2.27	79
8. „	female	91.39	—	1.72	5.17	—	1.72	—	100.00	1.02	58
9. „	total	88.82	—	3.05	2.92	1.46	1.46	2.19	100.00	1.74	137
10. 10-14	male	84.29	0.52	3.14	2.09	3.14	5.77	1.05	100.00	2.42	191
11. „	female	92.30	—	2.20	4.40	—	—	1.10	100.00	0.91	91
12. „	total	86.88	0.35	2.84	2.84	2.13	3.40	1.06	100.00	1.93	282
13. 15-19	male	87.11	2.44	2.79	2.09	4.18	—	1.39	100.00	1.54	287
14. „	female	93.27	—	3.85	—	1.92	0.96	—	100.00	0.68	104
15. „	total	88.75	1.79	3.07	1.53	3.58	0.26	1.02	100.00	1.31	391
16. 20-24	male	92.91	1.12	1.24	0.90	0.34	1.35	2.14	100.00	1.16	889
17. „	female	95.36	—	2.65	—	0.66	1.33	—	100.00	0.52	151
18. „	total	93.27	0.96	1.44	0.77	0.38	1.35	1.83	100.00	1.06	1,040
19. 25-above	male	93.28	0.97	0.77	0.36	0.16	0.39	4.07	100.00	1.41	3,098
20. „	female	95.16	0.86	0.56	0.28	0.14	0.43	2.56	100.00	0.95	702
21. „	total	93.63	0.95	0.74	0.34	0.16	0.39	3.79	100.00	1.33	3,800
22. total	male	91.72	1.09	1.14	0.70	0.76	0.88	3.71	100.00	1.56	4,748
23. „	female	94.94	0.45	1.26	0.67	0.45	0.59	1.64	100.00	0.83	1,345
24. „	total	92.43	0.95	1.17	0.69	0.69	0.82	3.25	100.00	1.40	6,093

<sup>1</sup> In secondary occupation.

TABLE 1000 PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK GROUPS IN THE SECONDARY OCCUPATION BY SEX FOR DAYS OF WORK IN THE PRIMARY OCCUPATION, ALL-INDIA RURAL SAMPLE PERSONS

(NSS 6th round : 949 villages)

days of work in primary occupation	sex	days of work in secondary occupation								average days of work	number of persons
		nil	1-4	5-9	10-14	15-19	20-24	25-above	total		
1	2	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. nil	male	64.23	5.13	6.16	4.55	2.30	2.64	15.10	100.00	6.03	682
2. "	female	83.80	2.28	3.95	2.39	1.87	1.35	4.36	100.00	2.35	963
3. "	total	75.68	3.46	4.86	3.23	2.01	1.89	8.82	100.00	3.88	1,645
4. 1-4	male	60.47	11.63	7.75	3.49	2.32	2.71	11.63	100.00	5.24	258
5. "	female	77.06	9.96	3.03	0.86	2.60	2.16	4.33	100.00	2.56	231
6. "	total	68.31	10.84	5.52	2.25	2.45	2.45	8.18	100.00	3.97	489
7. 5-9	male	56.87	7.47	11.57	6.02	3.62	6.02	8.43	100.00	5.76	415
8. "	female	77.95	5.44	5.44	1.81	2.42	3.62	3.32	100.00	2.74	331
9. "	total	66.21	6.57	8.85	4.16	3.08	4.96	6.17	100.00	4.43	746
10. 10-14	male	60.94	7.50	7.97	9.84	4.06	3.23	6.41	100.00	4.91	640
11. "	female	81.58	3.15	5.39	5.17	2.02	1.12	1.57	100.00	2.01	445
12. "	total	69.40	5.71	6.91	7.93	3.23	2.40	4.42	100.00	3.72	1,085
13. 15-19	male	59.56	7.11	10.90	10.74	8.06	0.95	2.68	100.00	4.34	633
14. "	female	78.97	3.98	3.98	5.40	5.40	0.28	1.99	100.00	2.45	352
15. "	total	66.49	5.99	8.43	8.83	7.11	0.71	2.44	100.00	3.67	985
16. 20-24	male	69.39	6.03	9.72	7.26	1.68	2.57	3.35	100.00	3.32	895
17. "	female	82.54	5.03	3.97	3.17	0.26	2.91	2.12	100.00	1.96	378
18. "	total	73.29	5.73	8.01	6.05	1.26	2.67	2.99	100.00	2.92	1,273
19. 25-above	male	83.46	3.10	2.05	1.61	0.75	0.68	8.35	100.00	2.90	3,221
20. "	female	85.69	2.88	1.39	1.39	0.40	0.70	7.55	100.00	2.56	1,006
21. "	total	83.99	3.05	1.89	1.56	0.66	0.69	8.16	100.00	2.82	4,227
22. total	male	72.75	5.09	5.68	4.64	2.25	1.81	7.78	100.00	3.87	6,744
23. "	female	82.52	3.75	3.51	2.67	1.75	1.46	4.34	100.00	2.38	3,706
24. "	total	76.22	4.61	4.91	3.94	2.08	1.68	6.56	100.00	3.34	10,450

1 In secondary occupation.



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9.6.2. PERCENTAGE DISTRIBUTION OF MAINTAINING 157 DAYS OR MORE  
IN DAYS OF WORK GROUPS IN THE SECONDARY OCCUPATION BY SEX, 1954  
OF WORK IN THE PRIMARY OCCUPATION. ALL-INDIA URBAN  
SAMPLE PERSONS

(NBS 6th round: 433 urban blocks)

DAYS OF WORK IN SECONDARY OCCUPATION	SEX	DAYS OF WORK IN SECONDARY OCCUPATION								Total persons	Total males
		no.	1-4	5-9	10-14	15-19	20-24	25-29	30-34		
1	2	3	4	5	6	7	8	9	10	11	12
1. nil	male	81.91	2.12	2.12	2.19	—	2.12	6.51	100.00	2.20	94
2. "	female	89.59	2.06	2.06	2.06	—	—	4.17	100.00	1.84	43
3. "	total	84.51	2.11	2.11	2.32	—	1.41	7.04	100.00	2.71	142
4. 1-4	male	75.00	8.23	12.50	—	—	—	4.17	100.00	2.10	34
5. "	female	87.50	—	—	—	—	—	12.50	100.00	2.25	16
6. "	total	80.00	5.00	7.50	—	—	—	7.50	100.00	2.61	40
7. 5-9	male	85.79	1.79	5.26	3.57	1.79	—	1.79	100.00	1.67	84
8. "	female	100.00	—	—	—	—	—	—	100.00	0.00	19
9. "	total	89.34	1.33	4.00	2.67	1.33	—	1.33	100.00	1.17	75
10. 10-14	male	78.10	3.81	5.71	4.76	2.86	2.86	1.90	100.00	2.30	103
11. "	female	95.00	—	2.50	—	—	—	2.50	100.00	0.44	40
12. "	total	82.75	2.76	4.83	2.43	2.07	2.07	2.07	100.00	2.11	145
13. 15-19	male	82.62	2.17	5.07	3.62	2.90	—	2.62	100.00	2.25	123
14. "	female	97.56	—	—	—	—	—	2.44	100.00	0.66	41
15. "	total	86.04	1.68	3.91	2.79	2.23	—	2.25	100.00	1.83	179
16. 20-24	male	91.69	1.11	3.05	1.66	—	1.11	1.38	100.00	1.02	201
17. "	female	96.66	—	1.67	—	—	—	1.67	100.00	0.56	60
18. "	total	92.40	0.95	2.85	1.43	—	0.95	1.42	100.00	0.96	421
19. 25-above	male	94.33	1.27	0.37	0.30	0.30	0.15	3.28	100.00	1.05	1,343
20. "	female	94.89	0.85	0.85	0.43	—	0.85	2.13	100.00	0.88	235
21. "	total	94.43	1.20	0.44	0.32	0.25	0.25	3.11	100.00	1.02	1,578
22. total	male	91.22	1.56	1.74	1.18	0.57	0.52	3.11	100.00	1.33	2,121
23. "	female	94.77	0.65	1.09	0.44	—	0.44	2.61	100.00	0.93	459
24. "	total	91.94	1.40	1.63	1.05	0.46	0.50	3.02	100.00	1.25	2,580

1 In secondary occupation.

TABLE 9127. PERCENTAGE DISTRIBUTION OF UNDER-EMPLOYED PERSONS IN INTENSITY OF EMPLOYMENT GROUPS BY REASONS FOR UNDER-EMPLOYMENT AND SEX. ALL INDIA RURAL AND URBAN SAMPLE PERSONS

(N88 7th Round: 951 villages and 441 urban blocks)

reasons for under employment	sex	intensity of employment						number of sample persons
		no work	less than quarter	quarter	half	three quarters	total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>.1: rural</b>								
1. own illness	male	24.24	13.51	7.76	7.87	8.80	10.53	327
2. "	female	9.11	6.93	9.06	5.12	7.00	7.06	174
3. "	total	15.33	10.20	8.36	6.68	8.22	8.99	501
4. domestic reasons	male	4.85	5.41	5.65	8.33	13.94	8.82	274
5. "	female	11.44	23.73	26.37	21.66	17.63	20.04	494
6. "	total	8.73	14.63	15.21	14.09	15.13	13.79	768
7. lack of materials, fall in demand, slack or off season	male	46.36	55.68	49.18	54.57	41.72	49.47	1,536
8. "	female	59.11	43.20	43.96	47.98	42.03	47.79	1,178
9. "	total	53.87	49.40	46.78	51.72	41.82	48.72	2,714
10. other reasons	male	24.55	25.40	37.41	29.23	35.54	31.18	968
11. "	female	20.34	26.14	20.61	25.24	33.34	25.11	619
12. "	total	22.07	25.77	29.65	27.51	34.83	28.50	1,587
13. all reasons	male	100.00	100.00	100.00	100.00	100.00	100.00	3,105
14. "	female	100.00	100.00	100.00	100.00	100.00	100.00	2,465
15. "	total	100.00	100.00	100.00	100.00	100.00	100.00	5,570
<b>.2: urban</b>								
1. own illness	male	22.58	8.11	4.35	7.55	9.03	8.87	37
2. "	female	10.00	18.75	8.70	6.15	5.56	8.33	11
3. "	total	19.51	11.32	5.80	7.14	8.64	8.74	48
4. domestic reasons	male	3.23	2.70	2.17	3.14	6.25	4.08	17
5. "	female	20.00	25.00	8.70	13.85	27.78	16.67	22
6. "	total	7.32	9.43	4.35	6.25	8.64	7.10	39
7. lack of materials, fall in demand, slack or off season	male	29.03	51.36	60.87	67.93	45.14	54.91	229
8. "	female	60.00	25.00	56.51	52.30	11.11	44.70	59
9. "	total	36.59	43.40	59.42	63.40	41.36	52.46	288
10. other reasons	male	45.16	37.83	32.61	21.38	39.58	32.14	134
11. "	female	10.00	31.25	26.09	27.70	55.55	30.30	40
12. "	total	36.58	35.85	30.43	23.21	41.36	31.70	174
13. all reasons	male	100.00	100.00	100.00	100.00	100.00	100.00	417
14. "	female	100.00	100.00	100.00	100.00	100.00	100.00	132
15. "	total	100.00	100.00	100.00	100.00	100.00	100.00	549

TABLE (9.14.71): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION RETURNING MONTHLY INCOME IN INCOME GROUPS AND PERCENTAGE OF POPULATION NOT RETURNING INCOME BY OCCUPATION: ALL-INDIA RURAL SAMPLE MALES

occupation	income group (Rs.)										percentage not returning income	average monthly income
	0-25	26-50	51-75	76-100	101-150	151-200	201-400	401 above	total	(10)	(11)	(12)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. medical work	41.68	41.66			8.33			8.33	100.00	14.29	81.81	
2. teaching	11.54	32.69	38.44	11.54	1.93	1.93	1.93		100.00	1.80	98.20	
3. administrative and technical work	38.23	25.30	12.94	8.82	8.24	4.11	2.36		100.00	8.60	91.40	
4. peon, cleaner, scavenger	46.45	30.32	15.49	7.74					100.00	6.63	93.37	
5. supervisory work on plant and machinery	100.00								100.00			13.00
6. operatives and artisans	56.57	28.87	9.01	3.47	2.08				100.00	16.41	83.59	
7. washerman, barber, cook	71.44	24.48	4.08						100.00	37.18	62.82	
8. cultivator	44.82	22.55	6.30	5.55	5.41	4.53	6.75	4.00	100.00	77.47	22.53	
9. share-cropper	49.36	31.27	4.15	4.15	1.37	3.46	5.56	0.68	100.00	78.00	22.00	
10. agricultural labour	80.25	18.26	1.05	0.32	0.06	0.06			100.00	9.48	90.52	
11. forestry, fishery, livestock workers	72.94	15.93	2.30	2.15	0.91	0.76	1.52	3.49	100.00	43.93	56.07	
12. manufacturer of food products	55.41	27.71	10.85	4.82			1.21		100.00	19.75	80.25	
13. manufacturer of textiles	50.71	31.51	9.58	4.10	2.74	1.36			100.00	12.00	88.00	
14. building industry worker	17.14	41.43	8.57	1.43	1.43				100.00	1.41	98.59	
15. hawker	53.85	36.92	6.15	1.34					100.00	5.00	95.00	
16. retailer	39.01	28.52	9.50	12.01	5.50	1.50	2.98	0.98	100.00	8.99	91.01	
17. wholesaler and financial operator	26.09	39.13	8.69	4.35	8.69		8.70	4.35	100.00	11.04	88.96	
18. unskilled labour	56.56	36.33	4.93	1.70	0.45				100.00	4.50	95.50	
19. all occupations	61.39	22.97	5.14	3.29	2.22	1.47	2.10	1.42	100.00	32.33	67.67	

(number of sample persons)

(12,015)



TABLE (9.14.7)2 : PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION RETURNING MONTHLY INCOME IN INDIAN GROUPS AND PERCENTAGE OF POPULATION NOT RETURNING INCOME BY OCCUPATION ALL INDIA RURAL SAMPLE FEMALES

occupation	'(NSS 7th round : 951 villages)										percentage average	
	income group (Rs.)										total	not returning income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. medical work	100.00	—	—	—	—	—	—	—	—	—	—	—
2. teaching	11.76	47.07	35.29	5.88	—	—	—	—	100.00	20.00	12.00	46.82
3. administrative and technical work	75.00	16.66	8.34	—	—	—	—	—	100.00	53.84	21.34	1.47
4. peon, cleaner, scavenger	95.24	2.38	—	—	—	2.38	—	—	100.00	19.23	1.47	—
5. supervisory work on plant and machinery	—	—	—	—	—	—	—	—	—	—	—	—
6. operatives and artisans	90.72	8.57	0.71	—	—	—	—	—	100.00	23.68	17.30	—
7. washerman, barber, cook	88.00	10.00	2.00	—	—	—	—	—	100.00	39.03	14.23	—
8. cultivator	66.34	20.75	0.99	1.91	1.01	3.81	2.39	1.90	100.00	85.83	32.09	—
9. share-cropper	66.68	23.36	—	3.32	3.32	—	—	3.32	100.00	87.07	39.29	—
10. agricultural labour	96.19	3.81	—	—	—	—	—	—	100.00	11.46	14.04	—
11. forestry, fishery, livestock workers	82.46	12.78	0.48	1.41	0.48	0.48	1.43	0.48	100.00	56.04	25.20	—
12. manufacturer of food products	94.11	2.95	1.96	0.98	—	—	—	—	100.00	12.07	13.47	—
13. manufacturer of textiles	93.20	3.89	2.91	—	—	—	—	—	100.00	14.88	13.16	—
14. building industry worker	100.00	—	—	—	—	—	—	—	100.00	75.00	43.00	—
15. hawker	92.31	7.69	—	—	—	—	—	—	100.00	7.14	14.96	—
16. retailer	73.53	20.59	5.88	—	—	—	—	—	100.00	17.08	21.00	—
17. wholesaler and financial operator	75.00	25.00	—	—	—	—	—	—	100.00	—	13.00	—
18. unskilled labour	90.41	8.01	0.79	0.79	—	—	—	—	10.000	13.19	15.89	—
19. all occupations	88.79	8.18	0.76	0.52	0.35	0.63	0.43	0.34	100.00	33.79	23.11	—
(number of sample persons).												
												(6,278)

# 7 SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (9.14.7)3: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION RETURNING MONTHLY INCOME IN INCOME GROUPS AND PERCENTAGE OF POPULATION NOT RETURNING INCOME BY OCCUPATION: ALL-INDIA RURAL SAMPLE PERSONS

(NSS 7th round : 951 villages)

occupation	income group (Rs.)										Percentage of population not returning income	
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	By income group	By occupation
(1)	0-25	26-50	51-75	76-100	101-150	151-200	201-400	401-above				
1. manual work	61.00	25.00	37.67	10.15	5.00	—	—	—	100.00	10.67	—	34.45
2. technician	11.60	36.25	—	—	1.45	1.45	1.45	5.00	100.00	1.45	—	55.71
3. administrative and technical work	49.67	24.73	12.64	8.25	7.00	3.84	2.18	—	100.00	14.15	—	51.00
4. post, clerical, scavenger and supervisory work on plant and machinery	36.85	24.47	12.18	6.09	—	0.61	—	—	100.00	0.61	—	20.87
5. operators and artisans	100.00	—	—	—	—	—	—	—	100.00	—	—	13.00
6. washerman, barber, cook	64.93	24.91	6.67	3.61	1.55	—	—	—	100.00	16.14	—	20.29
7. cultivator	77.04	19.48	3.48	—	—	—	—	—	100.00	37.61	—	19.59
8. shaper, carpenter	50.06	22.11	8.02	4.67	4.56	4.26	1.68	1.54	100.00	40.24	—	74.65
9. agricultural labour	62.36	29.00	3.47	4.03	1.73	2.86	1.57	1.42	100.00	80.60	—	49.27
10. forestry, fishery, livestock, wage	87.67	14.72	0.48	0.17	0.03	0.03	—	—	100.00	10.20	—	16.45
11. miscellaneous of total population	75.23	14.18	1.81	1.06	0.91	0.70	1.21	2.70	100.00	34.45	—	49.95
12. maintenance of taxies	76.77	14.05	6.94	3.70	—	—	0.54	—	100.00	11.46	—	22.29
13. building in house, workshop	72.36	14.30	6.68	1.70	1.16	0.57	—	—	100.00	13.73	—	23.16
14. trader	47.90	40.87	8.17	1.60	1.60	—	—	—	100.00	3.23	—	30.06
15. retailer	61.84	28.47	4.35	1.10	1.10	—	—	—	100.00	6.21	—	26.45
16. wholesaler and industrial operator	44.03	27.15	6.45	10.26	4.70	1.25	2.55	4.84	100.00	10.26	—	24.20
17. unskilled labour	13.23	17.00	7.41	3.70	7.41	—	7.40	5.00	100.00	10.00	—	19.02
18. all occupations	65.60	26.16	3.14	1.43	0.25	—	—	—	100.00	3.03	—	27.48
19. all occupations	50.00	15.00	5.67	4.00	1.00	1.00	1.00	1.00	100.00	—	—	—

(number of sample persons)

(10,000)

TABLE (9.15.71): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION RETURNING MONTHLY INCOME IN INCOME GROUPS AND PERCENTAGE OF POPULATION NOT RETURNING INCOME BY OCCUPATION: ALL-INDIA URBAN SAMPLE MALES

(NSS 7th round: 441 urban blocks)

occupation	income group (Rs.)										percentage not returning income	average income (Rs.)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
1. medical work	4.17	12.50	12.50	12.50	45.83	4.17	8.33	8.33	4.17	100.00	—	132.79
2. teaching	3.85	19.23	19.23	23.07	19.23	7.69	—	19.23	7.70	100.00	—	161.77
3. administrative and technical work	8.75	14.48	14.48	15.16	15.50	18.54	14.14	11.10	2.33	100.00	3.57	127.83
4. peon, cleaner, scavenger	17.11	39.48	39.48	22.36	17.11	3.94	—	—	—	100.00	0.87	51.34
5. supervisory work on plant and machinery	22.10	27.89	—	—	33.33	16.67	—	16.67	33.33	100.00	—	388.32
6. operatives and artisans	25.00	51.57	51.57	10.93	10.20	10.55	2.04	1.36	—	100.00	4.23	59.21
7. washerman, barber, cook	32.43	27.01	27.01	18.90	8.11	2.72	8.11	—	2.72	100.00	11.11	43.71
8. cultivator	100.00	—	—	—	—	—	—	—	—	100.00	72.38	91.96
9. share-cropper	75.20	—	24.80	—	—	—	—	—	—	100.00	84.21	12.50
10. agricultural labour	42.69	33.70	33.70	10.12	10.12	—	—	—	—	100.00	1.58	19.20
11. forestry, fishery, livestock workers	37.87	32.44	32.44	10.61	3.03	7.58	3.03	—	1.13	100.00	18.35	42.66
12. manufacturer of food products	36.36	12.61	12.61	24.32	16.22	13.51	0.90	1.52	—	100.00	—	47.17
13. manufacturer of textiles	31.58	52.64	52.64	7.89	2.63	5.26	—	—	—	100.00	—	57.21
14. building industry worker	28.79	36.36	36.36	19.69	9.10	6.06	—	—	—	100.00	—	38.02
15. hawker	20.62	29.70	29.70	14.56	11.52	10.30	6.66	4.84	1.80	100.00	1.49	45.61
16. retailer	16.18	35.31	35.31	10.29	7.35	5.88	1.47	11.76	—	100.00	6.77	80.40
17. wholesaler and financial operator	35.82	39.55	39.55	13.43	5.97	3.73	0.75	—	—	100.00	19.05	53.37
18. unskilled labour	25.58	29.74	29.74	16.37	11.31	8.42	3.84	3.30	0.75	100.00	2.19	42.79
19. all occupations	—	—	—	—	—	—	—	—	—	—	10.00	72.34

(number of sample persons)

(2,111)



# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (9.15.7)2: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION RETURNING MONTHLY INCOME IN INCOME GROUPS AND PERCENTAGE OF POPULATION NOT RETURNING INCOME BY OCCUPATION: ALL-INDIA URBAN SAMPLE FEMALES

occupation	income group (Rs.)										percentage not returning income	average income (Rs.)
	0-25	26-50	51-75	76-100	101-150	151-200	201-400	401- above	total	(10)	(11)	(12)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. medical work	—	20.00	20.00	40.00	—	—	—	20.00	100.00	—	—	90.53
2. teaching	6.25	25.00	37.50	12.50	6.25	—	12.50	—	100.00	—	—	93.56
3. administrative and technical work	49.99	16.67	16.67	16.67	—	—	—	—	100.00	25.00	—	44.33
4. peon, cleaner, scavenger	66.67	33.33	—	—	—	—	—	—	100.00	—	—	21.33
5. supervisory work on plant and machinery	—	—	—	—	—	—	—	—	—	—	—	—
6. operatives and artisans	93.75	6.25	—	—	—	—	—	—	100.00	36.00	—	14.56
7. washerman, barber, cook	54.17	41.66	4.17	—	—	—	—	—	100.00	27.27	—	25.49
8. cultivator	100.00	—	—	—	—	—	—	—	100.00	89.47	—	13.01
9. share-cropper	100.00	—	—	—	—	—	—	—	100.00	83.33	—	13.02
10. agricultural labour	95.40	4.60	—	—	—	—	—	—	100.00	6.45	—	14.15
11. forestry, fishery, livestock workers	76.18	14.29	9.53	—	—	—	—	—	100.00	43.24	—	21.33
12. manufacturer of food products	68.97	10.34	13.79	6.90	—	—	—	—	100.00	—	—	27.66
13. manufacturer of textiles	69.99	20.00	—	6.67	3.34	—	—	—	100.00	16.67	—	26.77
14. building industry worker	75.00	25.00	—	—	—	—	—	—	100.00	—	—	19.25
15. hawker	100.00	—	—	—	—	—	—	—	100.00	50.00	—	13.00
16. retailer	55.56	27.78	16.66	—	—	—	—	—	100.00	10.00	—	29.01
17. wholesaler and financial operator	80.00	20.00	—	—	—	—	—	—	100.00	—	—	16.00
18. unskilled labour	86.48	13.52	—	—	—	—	—	—	100.00	3.90	—	16.38
19. all occupations	74.94	16.53	4.80	2.13	0.80	—	0.54	0.26	100.00	23.47	—	25.24
(number of sample persons)	(490)											

TABLE (9.15.73): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION RETURNING MONTHLY INCOME IN INCOME GROUPS AND PERCENTAGE OF POPULATION NOT RETURNING INCOME BY OCCUPATION: ALL-INDIA URBAN SAMPLE PERSONS

(NSS 7th round: 441 urban blocks)

occupation	income group (Rs.)										percentage averages	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	not returning income	returning income
		0-25	26-50	51-75	76-100	101-150	151-200	201-400	401- above	total		
1. medical work		3.45	13.79	13.79	44.82	3.45	6.90	6.90	6.90	100.00	—	100.00
2. teaching		4.76	21.43	28.58	16.67	7.14	—	16.66	4.76	100.00	—	100.00
3. administrative and technical work		9.57	14.52	15.18	15.18	18.49	13.86	10.89	2.31	100.00	4.11	129.83
4. peon, cleaner, scavenger, and machinery		23.37	38.70	19.54	14.94	3.45	—	—	—	100.00	0.76	47.55
5. supervisory work on plant		—	—	—	33.33	16.67	—	16.67	33.33	100.00	—	388.32
6. operatives and artisans		25.81	26.77	24.52	9.68	10.00	1.94	1.28	—	100.00	6.63	26.89
7. washerman, barber, cook		32.95	48.87	9.09	3.41	5.68	—	—	—	100.00	16.19	38.74
8. cultivator		39.05	24.40	17.09	7.30	2.43	7.30	—	2.43	100.00	76.18	84.00
9. share-cropper		100.00	—	—	—	—	—	—	—	100.00	84.00	13.00
10. agricultural labour		83.49	16.51	—	—	—	—	—	—	100.00	3.63	17.13
11. forestry, fishery, livestock workers		49.11	30.00	9.99	8.18	—	1.82	—	0.90	100.00	24.66	38.55
12. manufacturer of food products		47.37	28.42	11.58	4.21	5.26	2.11	1.05	—	100.00	—	41.20
13. manufacturer of textiles		40.42	14.19	19.15	14.19	11.34	0.71	—	—	100.00	4.08	50.74
14. building industry worker		35.71	50.01	7.14	2.38	4.76	—	—	—	100.00	—	36.24
15. hawker		29.85	35.82	19.40	8.96	5.97	—	—	—	100.00	2.90	45.12
16. retailer		24.05	29.49	14.76	10.38	9.29	6.01	4.38	1.64	100.00	7.11	75.35
17. wholesaler and financial operator		20.55	34.25	9.60	6.85	5.47	1.37	10.96	10.95	100.00	17.98	144.05
18. unskilled labour		53.85	30.28	8.65	3.85	2.41	0.48	—	0.48	100.00	2.81	33.41
19. all occupations		33.69	27.56	14.46	9.80	7.17	3.21	2.86	1.25	100.00	12.53	64.72
(number of sample persons)											(2,601)	

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (9 IS 2) PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN DAYS OF WORK IN THE PRIMARY OCCUPATION, 1953-54, BY SEX, AGE AND  
INDEPENDENT SAMPLES: ALL INDIA RURAL AND URBAN  
SAMPLE PERSONS

(NSS 5th round : 939 villages and 405 urban blocks,

NSS 6th round : 949 villages and 436 urban blocks)

SEX	sample	DAYS OF WORK IN PRIMARY OCCUPATION								total	sample persons
		nil	1-4	5-9	10-14	15-19	20-24	25-29	30-34		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<b>.1: rural</b>											
1. male	1	9.44	3.23	5.41	8.96	9.11	12.03	51.83	100.00		9,812
2. "	2	9.87	3.55	5.29	8.02	8.72	12.12	51.43	100.00		10,008
3. "	combined	9.66	3.39	5.35	8.48	8.92	12.58	51.62	100.00		19,820
4. female	1	27.76	6.18	8.44	10.17	8.55	9.32	29.58	100.00		5,615
5. "	2	26.44	5.22	7.96	11.52	9.21	9.54	30.11	100.00		5,944
6. "	combined	27.09	5.68	8.19	10.87	8.89	9.43	29.85	100.00		11,559
7. total	1	16.11	4.30	6.51	9.39	8.91	11.04	43.74	100.00		15,427
8. "	2	16.06	4.16	6.29	9.23	8.90	11.78	43.48	100.00		15,952
9. "	combined	16.08	4.23	6.40	9.36	8.90	11.42	43.61	100.00		31,379
<b>.2: urban</b>											
1. male	1	4.28	1.31	2.28	5.13	6.83	18.37	61.81	100.00		3,500
2. "	2	3.15	0.59	1.63	3.47	5.52	18.02	67.62	100.00		3,269
3. "	combined	3.72	0.96	1.96	4.31	6.19	18.19	64.67	100.00		6,869
4. female	1	15.86	4.43	4.55	9.23	9.50	8.97	47.46	100.00		769
5. "	2	11.50	2.61	4.06	5.80	6.95	13.72	55.27	100.00		1,035
6. "	combined	13.41	3.38	4.27	7.26	8.04	11.70	51.94	100.00		1,804
7. total	1	6.37	1.87	2.60	5.87	7.31	16.67	59.22	100.00		4,269
8. "	2	5.13	1.07	2.20	4.02	5.86	17.01	64.71	100.00		4,404
9. "	combined	5.74	1.47	2.45	4.92	6.57	16.85	62.00	100.00		8,673



TABLE (9.18.5): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN DAYS OF WORK (IN THE PRIMARY OCCUPATION) GROUPS BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN SAMPLE PERSONS

(NSS 5th round: 939 villages and 405 urban blocks)

sex	sample	days of work in primary occupation								number of sample persons
		nil	1-4	5-9	10-14	15-19	20-24	25- above	total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
.1: rural										
1. male	1	9.44	2.95	4.78	7.85	8.57	11.63	54.78	100.00	6,442
2. "	2	9.42	3.38	5.09	8.06	8.77	12.80	52.48	100.00	6,634
3. "	combined	9.43	3.17	4.94	7.96	8.67	12.22	53.61	100.00	13,076
4. female	1	23.22	5.90	8.04	9.75	7.88	9.04	31.17	100.00	3,795
5. "	2	27.03	4.98	7.66	10.87	9.27	9.09	31.10	100.00	4,058
6. "	combined	27.01	5.42	7.84	10.33	8.60	9.07	31.13	100.00	7,853
7. total	1	16.40	4.04	5.99	8.56	8.31	10.67	46.03	100.00	10,237
8. "	2	16.11	3.98	6.07	9.13	8.96	11.39	44.36	100.00	10,692
9. "	combined	16.25	4.01	6.03	8.85	8.64	11.04	45.18	100.00	20,929
.2: urban										
1. male	1	3.83	1.19	1.85	5.03	6.59	18.54	62.97	100.00	2,427
2. "	2	2.97	0.56	1.46	2.97	5.47	18.92	67.65	100.00	2,321
3. "	combined	3.41	0.88	1.66	4.02	6.04	18.72	65.27	100.00	4,748
4. female	1	17.24	4.36	5.08	9.62	9.26	7.80	46.64	100.00	551
5. "	2	12.47	2.64	3.78	4.79	6.67	13.60	56.05	100.00	794
6. "	combined	14.42	3.35	4.31	6.77	7.73	11.23	52.19	100.00	1,345
7. total	1	6.31	1.78	2.45	5.89	7.09	16.55	59.93	100.00	2,978
8. "	2	5.39	1.09	2.05	3.44	5.78	17.56	64.69	100.00	3,115
9. "	combined	5.84	1.43	2.25	4.63	6.42	17.07	62.36	100.00	6,093

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE 9 IS 6: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION  
IN DAYS OF WORK IN THE PRIMARY OCCUPATION GROUPS BY SEX FROM TWO  
INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN  
SAMPLE PERSONS

(NSS 6th round: 949 villages and 438 urban blocks)

sex	sample	days of work in primary occupation								total	number of sample persons
		nil	1-4	5-9	10-14	15-19	20-24	25- above			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
.1: rural											
1. male	1	9.44	3.77	6.62	11.04	10.15	12.78	46.30	100.00	2,370	
2. "	2	10.76	3.88	5.69	7.94	8.62	13.75	49.36	100.00	3,274	
3. "	combined	10.10	3.82	6.15	9.49	9.39	13.27	47.78	100.00	6,744	
4. female	1	26.81	6.76	9.28	11.04	9.95	9.89	26.27	100.00	1,830	
5. "	2	25.18	5.73	8.59	12.93	9.07	10.50	28.00	100.00	1,886	
6. "	combined	25.98	6.23	8.93	12.01	9.50	10.20	27.15	100.00	3,716	
7. total	1	15.53	4.82	7.55	11.04	10.08	11.77	39.21	100.00	5,190	
8. "	2	15.94	4.54	6.73	9.73	8.78	12.58	41.70	100.00	5,260	
9. "	combined	15.73	4.68	7.14	10.38	9.42	12.18	40.47	100.00	10,450	
.2: urban											
1. male	1	5.31	1.58	3.26	5.31	7.36	17.99	59.19	100.00	1,073	
2. "	2	3.53	0.67	2.00	4.58	5.63	16.03	67.56	100.00	1,048	
3. "	combined	4.43	1.13	2.64	4.95	6.51	17.02	63.32	100.00	2,121	
4. female	1	12.38	4.59	3.21	8.26	10.09	11.93	49.54	100.00	218	
5. "	2	8.71	2.49	4.98	9.13	7.88	14.11	52.70	100.00	241	
6. "	combined	10.46	3.48	4.14	8.71	8.93	13.07	51.21	100.00	459	
7. total	1	6.51	2.09	3.25	5.81	7.82	16.96	57.56	100.00	1,291	
8. "	2	4.50	1.01	2.56	5.43	6.05	15.67	64.78	100.00	1,289	
9. "	combined	5.50	1.55	2.91	5.62	6.94	16.32	61.16	100.00	2,580	

TABLE (9.19.5)1: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN SECONDARY OCCUPATION GROUPS  
BY PRIMARY OCCUPATION GROUPS: ALL INDIA RURAL SAMPLE MALES  
(NSS 5th round: 930 villages)

primary without occupa- tion <sup>1</sup>	secondary occupation <sup>1</sup>															total sample percentage		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)		(16)	(17)
1.	58.76	6.24	2.41	3.02	0.80	7.24	2.01	0.40	0.20	—	9.27	1.41	1.61	2.41	2.41	2.81	1.41	100.00
2.	59.44	0.74	0.29	9.76	9.75	8.16	2.11	0.50	1.01	0.64	1.36	1.19	0.44	0.67	0.45	3.15	0.79	100.00
3.	40.21	0.75	21.60	0.54	18.82	5.70	1.18	0.43	0.65	0.76	1.83	2.26	0.32	0.75	2.37	1.83	1.83	100.00
4.	56.95	1.85	17.36	9.24	0.29	4.48	0.58	0.58	1.56	1.27	0.97	1.02	0.10	0.34	3.02	0.39	100.00	
5.	69.53	1.53	10.84	2.09	6.54	4.59	0.56	0.56	0.83	0.56	—	—	—	0.42	1.11	0.28	100.00	
1-5.	57.86	1.29	6.54	7.94	8.00	6.89	1.60	0.51	1.04	0.74	1.65	1.18	0.38	0.68	2.90	0.80	100.00	
6.	61.00	2.00	14.00	3.00	10.00	2.00	1.00	—	—	—	3.00	1.00	—	1.00	1.00	1.00	100.00	
7.	56.92	5.69	17.07	0.81	13.01	0.81	0.81	—	—	—	1.63	—	—	—	1.02	1.02	100.00	
8.	55.41	0.90	13.97	6.31	11.71	3.60	—	—	0.45	—	1.80	1.35	—	0.45	3.00	0.45	100.00	
9.	61.83	1.53	8.40	0.76	13.74	1.53	0.76	—	0.76	4.58	3.82	2.29	—	—	—	—	100.00	
10.	58.73	12.24	10.14	2.10	3.85	1.05	—	0.70	0.35	0.35	3.94	1.05	0.35	—	—	—	100.00	
11.	65.63	4.17	12.50	5.21	4.69	2.60	1.04	—	—	1.04	0.52	—	—	0.52	3.15	—	100.00	
12.	65.98	9.03	13.20	2.08	3.47	—	—	—	1.39	0.69	2.08	0.69	—	—	2.08	—	100.00	
13.	84.22	3.57	5.27	0.46	0.93	1.54	—	—	0.15	0.31	—	—	0.15	0.77	1.39	0.31	100.00	
14.	70.43	3.03	14.95	2.93	3.87	1.36	—	—	0.10	0.31	1.25	0.10	0.10	—	2.32	0.42	100.00	
15.	68.15	1.77	10.63	5.31	3.54	2.65	—	—	0.88	1.77	1.77	—	2.65	—	0.88	—	100.00	
6-15.	69.30	4.22	11.60	2.57	4.87	1.62	0.17	0.07	0.24	0.55	1.75	0.41	0.21	0.27	1.81	0.34	100.00	
1-15.	60.42	1.94	7.68	6.75	7.30	5.71	1.28	0.41	0.85	0.70	1.67	1.01	0.34	0.59	2.65	0.70	100.00	
																		13.976

<sup>1</sup> (1) farmer; (2) cultivator; (3) share-cropper; (4) agricultural labour; (5) forestry, fishery, livestock workers; (1-5) all agricultural occupations; (6) manufacturer of food products; (7) manufacturer of textiles; (8) other manufacturers; (9) construction and sanitary services; (10) trade and commerce; (11) transport and communication; (12) administrative services; (13) professional services; (14) other services; (15) others; (6-15) all non-agricultural occupations; (1-15) all occupations.



TABLE (9.19.52): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN SECONDARY OCCUPATION GROUPS  
BY PRIMARY OCCUPATION GROUPS: ALL INDIA RURAL SAMPLE FEMALES  
(NSS 5th round: 939 villages)

primary occupa- tion <sup>1</sup>	secondary occupation <sup>1</sup>	secondary occupation <sup>1</sup>															total sample percentages	total 100
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1.	73.46	3.40	1.69	3.96	6.21	6.22	0.56	0.56	0.56	1.99	—	—	0.03	0.18	2.89	1.69	100.00	177
2.	66.92	0.39	0.15	3.53	11.84	5.85	2.08	2.09	0.33	0.09	0.58	—	—	0.26	1.00	—	100.00	3,394
3.	59.74	—	16.58	0.26	16.05	4.48	0.76	0.53	—	—	—	0.16	—	0.21	3.17	—	100.00	360
4.	74.26	1.32	10.63	2.30	0.29	3.62	0.93	0.39	0.83	0.25	—	—	—	—	—	—	100.00	2,043
5.	61.56	—	10.51	0.60	6.31	10.81	2.76	—	—	0.30	—	—	—	—	7.21	—	100.00	233
1-5.	68.78	0.74	5.19	3.84	7.85	5.31	2.09	1.29	0.47	0.13	0.63	0.05	0.02	0.19	3.21	0.12	100.00	6,237
6.	66.09	2.92	3.51	0.58	7.61	0.36	2.34	—	0.58	—	1.75	—	—	0.59	4.63	—	100.00	171
7.	75.73	0.74	9.55	2.20	7.34	0.74	0.74	—	0.74	—	—	—	0.74	—	—	—	100.00	136
8.	67.74	0.81	8.86	3.23	12.09	2.42	—	—	3.23	0.74	0.81	—	—	—	0.81	—	100.00	124
9.	79.31	—	3.45	3.45	5.17	—	—	—	—	6.90	—	—	—	—	—	1.72	100.00	55
10.	71.61	4.95	4.95	1.23	6.17	—	1.23	2.47	1.23	—	1.23	—	—	—	3.70	1.23	100.00	51
11.	100.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00	14
12.	100.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00	3
13.	86.54	—	3.84	—	3.85	—	—	—	—	—	—	—	—	—	—	—	100.00	42
14.	80.56	0.42	1.67	0.31	3.66	1.15	0.21	0.21	0.10	0.21	0.10	0.10	—	—	1.92	—	100.00	917
15.	64.52	3.23	12.89	—	6.45	—	6.45	3.23	—	3.23	—	—	—	—	—	0.42	100.00	31
6-15.	82.53	0.98	3.57	0.86	5.23	2.03	0.62	0.37	0.19	0.49	0.37	0.06	0.06	0.06	1.91	0.37	100.00	—
1-15.	71.63	0.79	4.83	3.22	7.31	4.64	1.78	1.10	0.47	0.20	0.37	0.05	0.03	0.17	2.94	0.23	100.00	7,632

<sup>1</sup> (1) farmer; (2) cultivator; (3) share-cropper; (4) agricultural labourer; (5) manufacturer of food products; (6) manufacturer of non-food products; (7) manufacturer of handicrafts; (8) manufacturer of metal products; (9) manufacturer of wood products; (10) manufacturer of paper products; (11) transport and communication services; (12) other services; (13) all non-agricultural occupations; (14-15) all occupations.

TABLE (9.19.53): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN SECONDARY OCCUPATION GROUPS  
BY PRIMARY OCCUPATION GROUPS: ALL-INDIA RURAL SAMPLE PERSONS

(NSS 5th round: 939 villages)

primary without- occupa- tion!	secondary occupation <sup>1</sup>															number of sample persons		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1.	62.60	5.48	2.23	3.26	2.23	6.97	1.63	0.45	0.30	—	7.27	1.04	1.19	1.78	2.08	1.49	100.00	674
2.	62.09	0.62	0.24	8.25	10.48	7.34	2.42	1.07	0.76	0.45	1.09	0.77	0.29	0.50	3.07	0.56	100.00	9,354
3.	45.87	0.53	20.15	0.46	18.01	5.35	1.07	0.46	0.46	0.53	1.30	1.68	0.23	0.61	1.99	1.30	100.00	1,310
4.	65.59	1.59	14.00	5.78	0.29	4.05	0.76	0.49	1.19	0.75	0.88	0.56	0.05	0.29	3.39	0.34	100.00	1,099
5.	67.01	1.05	10.74	1.62	6.46	6.56	1.24	0.38	0.57	0.38	0.48	—	—	0.28	3.04	0.19	100.00	1,662
1-5.	62.02	1.08	6.03	6.39	7.95	6.29	1.79	0.81	0.81	0.51	1.26	0.75	0.24	0.49	3.01	0.57	100.00	16,389
6.	64.20	2.58	7.38	1.48	8.49	6.64	1.85	—	0.37	—	2.21	0.37	—	0.74	3.32	0.37	100.00	271
7.	66.79	3.09	13.12	1.54	10.04	0.77	0.77	0.39	0.39	0.39	0.77	—	0.39	—	0.78	0.77	100.00	259
8.	59.84	0.86	12.14	5.20	11.85	3.18	—	1.44	—	1.44	1.44	0.87	—	0.29	2.60	0.29	100.00	346
9.	67.19	1.06	6.87	1.59	11.11	1.06	0.53	—	0.53	5.29	2.65	1.59	—	—	—	0.53	100.00	189
10.	61.59	10.63	8.99	1.91	4.36	0.82	0.27	1.09	0.54	0.27	4.90	0.82	0.27	—	3.27	0.27	100.00	367
11.	67.96	3.88	11.65	4.85	4.37	2.43	0.97	—	—	0.97	0.49	—	—	0.49	1.94	—	100.00	206
12.	66.45	8.91	13.02	2.05	3.42	—	—	—	1.37	0.68	2.05	0.68	—	—	1.37	—	100.00	148
13.	84.37	3.30	5.16	0.43	1.15	1.72	—	—	—	0.14	0.29	—	0.14	0.72	2.29	0.29	100.00	698
14.	80.00	1.72	8.32	1.62	3.76	1.25	0.10	0.10	0.10	0.26	0.68	0.10	0.05	—	1.52	0.42	100.00	1,914
15.	67.37	2.08	11.12	4.17	4.17	2.08	1.39	0.69	0.69	2.08	1.39	—	2.08	—	0.69	—	100.00	144
6-15.	74.02	3.06	8.72	1.96	5.00	1.76	0.33	0.18	0.33	0.53	1.26	0.29	0.15	0.20	1.86	0.35	100.00	4,540
1-15.	64.63	1.51	6.61	5.42	7.31	5.31	1.47	0.67	0.71	0.51	1.26	0.65	0.22	0.43	2.76	0.53	100.00	20,929

<sup>1</sup> (1) farmer; (2) cultivator; (3) share-cropper; (4) agricultural labour; (5) forestry, fishery, livestock workers; (1-5) all agricultural occupations; (6) manufacturer of food products; (7) manufacturer of textiles; (8) other manufacturers; (9) construction and sanitary services; (10) trade and commerce; (11) transport and communication services; (12) administrative services; (13) professional services; (14) other services; (15) others; (6-15) all non-agricultural occupations; (1-15) all occupations.

TABLE (9.20.5)1: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN SECONDARY OCCUPATION GROUPS BY PRIMARY OCCUPATION GROUPS: ALL-INDIA URBAN SAMPLE MALES

(NSS 5th round : 405 urban blocks)

primary without secondary occupa- tion <sup>1</sup>	secondary occupation <sup>1</sup>	secondary occupation <sup>1</sup>															number of total sample persons
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1.	53.74	4.48	—	4.48	—	5.97	2.99	2.99	2.98	—	11.94	1.49	1.49	2.98	4.47	—	100.00
2.	70.36	0.50	—	7.04	4.02	7.03	1.51	—	0.50	—	2.01	2.51	—	0.50	2.01	2.01	100.00
3.	55.31	—	25.53	—	10.64	2.13	—	—	—	—	—	2.13	2.13	—	—	2.13	100.00
4.	70.91	2.13	10.63	2.13	—	3.55	—	0.71	0.71	3.55	2.13	—	—	—	2.84	0.71	100.00
5.	84.00	2.29	3.43	1.14	2.86	2.29	—	—	—	0.57	1.71	—	—	0.57	—	1.14	100.00
1-5.	71.37	1.75	5.25	3.50	2.86	4.46	0.70	0.48	0.64	0.95	2.86	1.11	0.32	0.64	1.75	1.27	100.00
6.	89.78	1.46	—	0.73	—	—	—	—	3.65	0.73	1.46	—	—	—	2.19	—	100.00
7.	87.23	1.42	1.18	0.24	1.65	1.65	0.47	0.71	—	—	1.49	—	0.24	0.24	0.24	0.24	100.00
8.	90.36	1.26	1.26	0.42	0.84	—	0.42	—	—	0.42	—	0.42	—	0.42	0.42	0.84	100.00
9.	86.55	0.77	1.54	1.15	0.38	0.38	—	1.54	0.38	—	2.70	0.77	—	0.38	1.27	1.54	100.00
10.	83.21	4.04	1.13	0.48	0.65	0.97	1.13	0.48	—	—	5.65	—	0.16	0.81	0.64	0.65	100.00
11.	92.45	1.81	0.91	0.30	0.30	1.51	0.30	—	—	—	0.30	—	0.30	0.44	1.41	0.61	100.00
12.	90.21	3.70	0.89	0.30	—	0.30	—	—	—	—	2.47	—	—	—	—	—	100.00
13.	71.77	13.73	1.18	—	—	1.57	0.89	0.39	—	—	1.31	—	0.19	0.28	0.28	0.58	100.00
14.	91.87	1.78	0.40	—	0.59	0.89	0.20	0.20	0.10	—	1.98	0.40	0.19	0.30	0.30	0.30	100.00
15.	90.16	1.73	0.58	—	1.16	0.58	—	0.58	—	0.58	1.73	—	0.58	0.58	1.16	0.58	100.00
6-15.	88.06	3.03	0.87	0.29	0.56	0.85	0.32	0.34	0.17	0.07	2.94	0.17	0.15	0.70	0.30	0.38	100.00
1-15.	85.86	2.86	1.45	0.72	0.86	1.32	0.38	0.36	0.23	0.19	2.93	0.29	0.15	0.70	1.01	0.67	100.00

<sup>1</sup> (1) farmer; (2) cultivator; (3) share-cropper; (4) agricultural labour; (5) livestock rearing; (6) manufacturer of food products; (7) manufacturer of textiles; (8) other manufacturing; (9) commerce; (10) transport and communication services; (11) administrative services; (12) professional services; (13) other services; (14) all non-agricultural occupations; (1-15) all occupations.



TABLE (9.20.5)2: PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN SECONDARY OCCUPATION GROUPS  
BY PRIMARY OCCUPATION GROUPS: ALL-INDIA URBAN SAMPLE FEMALES

(NSS 5th round: 405 urban blocks)

primary occupa- tion <sup>1</sup>	secondary occupation	secondary occupation <sup>2</sup>															total	number of sample persons
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1.	70.00	—	—	—	10.00	—	—	—	—	—	10.00	—	—	—	—	10.00	100.00	10
2.	79.57	—	—	4.30	10.75	1.08	2.15	—	—	—	—	—	—	—	2.15	—	100.00	93
3.	80.00	—	10.00	—	10.00	—	—	—	—	—	—	—	—	—	—	—	100.00	20
4.	85.23	—	5.24	0.95	—	1.90	—	1.43	0.48	1.43	0.95	0.48	—	—	0.48	1.43	100.00	210
5.	80.64	4.84	—	—	3.23	4.84	—	—	—	—	1.61	—	—	—	4.84	—	100.00	62
1-5.	82.53	0.76	3.29	1.52	3.80	2.03	0.51	0.76	0.25	0.76	1.01	0.25	—	—	1.52	1.01	100.00	305
6.	96.72	—	0.87	—	3.28	—	—	—	—	—	—	—	—	—	—	—	100.00	61
7.	90.48	0.87	0.43	—	5.19	—	0.43	1.30	—	—	—	—	—	—	1.30	—	100.00	231
8.	89.60	—	2.08	—	2.08	—	—	2.08	—	—	2.08	—	—	—	—	2.08	100.00	48
9.	92.10	—	—	2.63	1.32	—	—	1.32	—	—	—	—	—	—	2.63	—	100.00	76
10.	81.66	6.67	—	—	—	1.67	5.00	—	—	—	3.33	—	—	—	1.57	—	100.00	60
11.	100.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00	5
12.	100.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00	15
13.	98.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00	55
14.	95.58	1.02	0.68	—	—	—	0.68	—	—	—	0.34	—	0.34	—	—	1.02	100.00	294
15.	99.05	—	—	—	0.95	—	—	—	—	—	—	—	—	—	—	—	100.00	105
6-15.	93.57	0.95	0.42	0.21	1.78	0.11	0.63	0.53	—	—	0.42	—	0.11	—	0.74	0.53	100.00	959
1-15.	90.34	0.89	1.27	0.59	2.39	0.67	0.59	0.59	-0.07	0.22	0.59	0.07	0.07	—	0.97	0.68	100.00	1,345

<sup>1</sup> (1) farmer; (2) cultivator; (3) share-cropper; (4) agricultural labour; (5) forestry, fishery, livestock workers; (1-5) all agricultural occupations; (6) manufacturer of food products; (7) manufacturer of textiles; (8) other manufacturers; (9) construction and sanitary services; (10) trade and commerce; (11) transport and communication services; (12) administrative services; (13) professional services; (14) other services; (15) others; (6-15) all non-agricultural occupations; (1-15) all occupations.

TABLE (9.20.53): PERCENTAGE DISTRIBUTION OF GAINFULLY EMPLOYED POPULATION IN SECONDARY OCCUPATION GROUPS BY PRIMARY OCCUPATION GROUPS: ALL-INDIA URBAN SAMPLE PERSONS

(NSS 5th round: 405 urban blocks)

primary without occupa- tion <sup>1</sup>	secondary occupation <sup>1</sup>	secondary occupation <sup>1</sup>															total sample persons	number of sample persons
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	18	(19)
1.	55.83	3.89	—	3.90	1.30	5.20	2.60	2.60	2.60	—	11.68	1.30	1.30	2.60	3.90	1.30	100.00	77
2.	73.30	0.34	—	6.17	0.17	5.13	1.71	—	0.31	—	1.37	1.71	—	0.34	2.65	1.37	100.00	292
3.	62.69	—	20.90	—	10.45	1.49	—	—	—	—	—	1.49	1.49	—	—	1.49	100.00	67
4.	79.50	0.85	7.42	1.42	—	2.56	—	1.14	0.57	2.28	1.42	—	—	—	1.42	1.42	100.00	301
5.	83.13	2.95	2.54	0.84	2.95	2.95	—	—	—	0.42	1.69	—	—	0.42	1.27	0.84	100.00	237
1-5.	75.68	1.37	4.49	2.73	3.22	3.32	0.08	0.59	0.49	0.88	2.15	0.78	0.20	0.39	1.66	1.17	100.00	1,024
6.	91.91	1.01	—	0.51	1.01	—	—	—	2.52	0.51	1.01	—	—	—	—	—	100.00	198
7.	88.38	1.22	0.92	0.15	2.91	1.07	0.46	0.92	—	—	2.91	—	0.15	0.18	0.61	0.15	100.00	654
8.	90.23	1.05	1.30	0.35	1.05	—	0.35	0.35	—	0.25	2.78	0.25	—	0.25	0.35	1.05	100.00	287
9.	87.78	0.60	1.19	1.49	0.60	0.30	—	1.49	0.30	—	2.08	0.60	—	0.20	2.08	1.19	100.00	236
10.	83.06	4.27	1.03	0.44	0.59	1.03	1.47	0.44	—	—	5.45	—	0.15	0.74	0.74	0.59	100.00	679
11.	92.55	1.79	0.89	0.30	0.30	1.49	0.30	—	—	—	0.30	—	—	—	1.19	0.89	100.00	335
12.	90.44	3.62	0.87	0.20	—	0.20	—	—	—	—	2.32	—	—	0.43	0.87	0.20	100.00	690
13.	76.45	11.29	0.97	—	—	1.29	—	0.32	—	—	3.55	—	—	4.52	0.64	0.97	100.00	310
14.	92.71	1.61	0.45	—	0.45	0.69	0.31	0.15	0.08	—	1.61	0.31	0.15	0.23	—	0.45	100.00	1,261
15.	93.52	1.08	0.36	—	1.08	0.36	—	0.36	—	0.36	1.08	—	0.36	0.36	—	0.36	100.00	274
6-15.	89.08	2.64	0.79	0.28	0.79	0.71	0.37	0.37	0.14	0.06	2.47	0.14	0.14	0.57	0.85	0.57	100.00	5,009
1-15.	86.83	2.42	1.41	0.69	1.20	1.19	0.43	0.41	0.20	0.20	2.41	0.25	0.15	0.54	1.00	0.67	100.00	6,093

<sup>1</sup> (1) farmer; (2) cultivator; (3) share-cropper; (4) agricultural labour; (5) housewife; (6) factory, mill, handicraft, (7) manufacturer; (8) other manufacturer; (9) construction and allied services; (10) trade and commerce; (11) transport and communication services; (12) administrative services; (13) professional services; (14) other services; (15) others.

## APPENDIX ONE

## CONCEPTS OF ECONOMIC STATUS AT SUCCESSIVE CENSUSES

01.1. In Census 1881, the number of 'actual workers' was recorded and classified according to 'occupation'. 'The actual workers' were defined as being only such persons as actually worked and contributed to the family income. Boys at schools, young children and women not in regular employment were not to be shown at all as 'actual workers', and employment in domestic occupations as spinning did not entitle women to be 'actual workers' unless the produce of their labour was regularly brought to market. In Census 1891, the distinction between 'actual workers' and others was obliterated, inasmuch as 'occupation or means of subsistence' was recorded for all persons, and it was not possible to say whether the entry was for the occupation of the person concerned or the occupation of another person on whom the person concerned depended for subsistence. In Census 1901, the category of 'actual workers' was extended to include persons who were in receipt of income without working. 'Dependants' were distinguished from 'actual workers' as consisting of 'women, children and the old and infirm who rely on others for their support and whose occupation, if they have any, is not sufficiently important to augment family income'. With minor changes in instructions these concepts remained unchanged in 1911 and 1921 Censuses. In Census 1931, the classification of population by economic status was made, for the first time, into earners, working dependants (who, though dependants, nevertheless work and have an 'occupation'), and others (who have no occupation, i.e., the non-working dependants). The term 'actual worker' was used in Census 1931 Report for the aggregate of earners and working dependants. Only those women and children were shown as earners who helped to augment the family income by permanent and regular work for which a return was obtained in cash or kind. Dependants who assisted in the work of the family and contributed to its support without actually earning wages were shown as working dependants and their subsidiary occupations noted<sup>1</sup>.

01.2. In Census 1941, 'occupation' was made to refer specifically to 'gainful occupations' only, so that housewives were no longer classified as working dependants in the occupational group 'domestic service': persons who were wholly dependent were also clearly distinguished from others who were partly dependent. A person was wholly dependent if he had 'no income in cash or kind', and a person who 'contributes in cash or kind towards the support of the household without being definitely capable of supporting himself' was to be considered partly dependent. In Census 1931, women who took part in household enterprise, say, of agriculture

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<sup>1</sup>As a departure from the basic gainful occupation concepts of the Census, women who kept house for their husbands were to be considered as working dependants in Census 1931, but with the subsidiary occupation of housekeeping. The instructions were, however, given effect to only in Madras and Travancore-Cochin, where 68 lakhs of 'house-keeping women' were classed as working dependants in 'domestic service', and were recorded as such.



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as extensively as men, were to be classed as 'working dependants' on the ground that they were not in receipt of pay, while boys who earned a small amount as pay in cash or kind were classed as 'earners'. In Census 1941, however, the treatment of unpaid family helpers, especially women, who took active part in the cultivation of the family holdings but received no pay in cash or kind, was different in different localities. For the dependants, the means of subsistence was recorded anew in Census 1941.

01.3. In Census 1951, the population was classed into self-supporting persons, earning dependants, and non-earning dependants. No specific time reference was adopted for the classification, the answers being based presumably on what the informant considered to be a particular person's usual status, unemployed persons might describe themselves as belonging to any of the three categories depending on what they considered their usual status to be. A self-supporting person was defined as one who received income in cash or kind, sufficient at least for his own maintenance. The earning dependant was one who received a regular, small income not sufficient for his own maintenance. Unpaid family workers were included in the category of earning dependants by definition. Persons who did not secure any income either in cash or kind were to be treated as non-earning dependants. A basis for comparison between Census 1931 and Census 1951 figures of earner classification, has been given in *Census of India, 1951, Volume I, Part I-B*. 'Non-earning dependants' of 1951 were equated to 'non-working dependants' of 1931, plus about 68 lakhs of 'house keeping women' classed as working dependants in 'domestic service' in Madras and Travancore Cochin. The 'earning dependants' of 1951 are equated to the 'working dependants' of 1931, minus the 68 lakhs of house-keeping women mentioned above, plus an unknown number X, who were classed as 'earners' in 1931 because they earned pay, in cash or kind, but whose pay was insufficient even for their own individual upkeep. The self-supporting persons of 1951 are equated to 'earners' of 1931 minus this unknown number X.

## APPENDIX TWO

## ESTIMATION OF THE GAINFULLY EMPLOYED FROM CENSUS 1951

02.1. The method by which the gainfully employed persons in the rural and urban sectors in India were estimated from Census 1951 is explained here. Gainfully employed persons were necessarily either self-supporting (earners) or earning dependants though the converse is not true. In Census 1951, the numbers of self-supporting persons, earning dependants and non-earning dependants are given in eight livelihood classes. The approach was to get at the gainfully employed by starting with the total number of self-supporting persons and earning dependants, and subtracting the number deriving income from ungainful activity or source.

02.2. The eight livelihood classes adopted in Census 1951 were : (I) cultivators of land wholly or mainly owned, (II) cultivators of land wholly or mainly unowned, (III) cultivating labourers, (IV) non-cultivating owners of land and agricultural rent receivers; those deriving livelihood from (V) production other than cultivation, (VI) commerce, (VII) transport, or (VIII) other services and miscellaneous sources. The dependants were put in the livelihood class of the self-supporting person on whom they were dependent; and the principal means of livelihood of the self-supporting person on whom he is dependent was to be recorded as the principal means of livelihood of the earning dependant, while his own means of livelihood providing the earning, was recorded under his secondary means of livelihood<sup>1</sup>.

02.3. The distribution of self-supporting persons and earning dependants by sex and their own means of livelihood was first obtained for the rural and the urban sectors. The earners and earning dependants with their own means of livelihood IV, non-cultivating owners of land and agricultural rent receivers, were then taken off as they mainly derived livelihood from ungainful sources. The number of self-supporting persons and earning dependants in their own means of livelihood class VIII, other services and miscellaneous sources, also included some deriving their livelihood from ungainful sources like non-agricultural properties, pension, remittance, scholarship, as also beggars and inmates of jails and asylums: the number of self-supporting persons in this category is given in Table B-III of *Census of India 1951, Vol. I, Part II-B* but the breakdown of such earning dependants between the rural and urban sectors had to be estimated.

02.4. Let  $n_{ij}$  and  $n'_{ij}$  denote the number of self-supporting persons and earning dependants, respectively having their principal means of livelihood  $i$  and the secondary means of livelihood  $j$ , where  $i$  can take values from 1 to 8 and  $j$

<sup>1</sup>There was some discrepancy in the numbers of earning dependants for which the principal means and the secondary means of livelihood were recorded, as given in Tables B-I and B-II of *Census of India 1951, Vol. I, Part II-B*, mainly from defective recording in Hyderabad and Vindhya Pradesh.

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from 0 to 8, and the Arabic numerals stand for the livelihood classes represented by the corresponding Roman numerals, excepting that 0 indicates no means of livelihood and  $8_u$  covered only those belonging to ungainful sources of livelihood class VIII. Thus,  $n_{i0}$  would denote the number of self-supporting persons with principal means of livelihood  $i$  and no secondary means of livelihood, and  $n'_{is_u}$  the number of earning dependants with own livelihood from ungainful sources of the livelihood class VIII, other services and miscellaneous sources, the persons on whom they depend having principal means of livelihood  $i$ . The total gainfully employed was then estimated by application of the formula<sup>1</sup>

$$\sum_{i,j} n_{ij} + \sum_{i,j} n'_{ij} - (\sum_j n_{4j} + \sum_i n'_{i4} + \sum_j n_{8,j} + \sum_i n'_{i8})$$

02.5. The total numbers of self-supporting persons and earning dependants by sex, in the rural and urban sectors separately, are given in Census publications. The number of earning dependants with their own means of livelihood class IV was also available in Census publications, but not for the rural and urban sectors separately. The number of earning dependants with own livelihood the ungainful sources of livelihood class VIII was also not available. These were estimated on the simple assumptions that the proportion on livelihood from ungainful sources was the same between the sexes and the sectors as for the livelihood class itself, and that the proportions for the earning dependants were the same as for the self-supporting persons.

02.6. Table (02.1) shows the gainfully employed persons as estimated from Census 1951<sup>2</sup>. The gainfully employed proportion of the total population is 38.98, 53.85 per cent for males and 23.28 per cent for females. The corresponding rural percentages are 40.18 for all persons, 54.10 for males and 25.76 for females; and the urban percentages 33.28 for all persons, 52.69 for males and 10.71 for females.

02.7. The distribution of the gainfully employed persons by livelihood class obtained from Census 1951 is shown in Table (02.2). The livelihood class refers to 'own means of livelihood', that is, the Census principal means of livelihood for earners and the Census subsidiary means of livelihood for earning dependants. Of the total gainfully employed, 70 per cent are engaged in agricultural occupations, 67 per cent of males and 77 per cent of females. In regard to the dependancy load, it is seen that of the total of persons dependent on agricultural occupations, 39 per cent are gainfully employed, 52 per cent males and 25 per cent females; of the total persons dependent

<sup>1</sup> This formula is apt to underestimate the gainfully employed from the labour force standpoint, as persons living on ungainful sources for principal means of livelihood may count for labour force participation by engaging in gainful economic activity in their secondary means. A formula could be evolved to cover this omission but other generalised assumptions will be involved.

<sup>2</sup> The total population as shown in Table (02.1), derived from Census Table on economic status, is about 2.5 lakh short of the total Census count given in Table 1 of *Census Paper No. 3, 1953*.



TABLE (02.1): ESTIMATE OF THE GAINFULLY EMPLOYED POPULATION (000)  
(Census of India 1951)

item	rural			urban			total		
	male (per cent)	female (per cent)	total (per cent)	male (per cent)	female (per cent)	total (per cent)	male (per cent)	female (per cent)	total (per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. self-supporting persons	70,630 (47.10)	15,112 (10.43)	85,741 (29.08)	16,548 (49.79)	2,110 (7.38)	18,658 (30.18)	87,177 (47.59)	17,222 (9.93)	104,399 (29.27)
2. earning dependants	11,893 (7.93)	23,243 (16.05)	35,136 (11.92)	1,524 (4.59)	1,278 (4.47)	2,802 (4.53)	13,416 (7.32)	24,521 (14.14)	37,937 (10.64)
3. self-supporting persons plus earning dependants	82,522 (55.03)	38,355 (26.48)	120,877 (41.00)	18,071 (54.37)	3,388 (11.85)	21,459 (34.71)	100,594 (54.91)	41,743 (24.07)	142,336 (39.91)
4. self-supporting agricultural rent-receivers etc.	881 (0.59)	527 (0.36)	1,408 (0.48)	165 (0.50)	68 (0.24)	233 (0.38)	1,046 (0.57)	595 (0.34)	1,641 (0.46)
5. earning dependant agricultural rent-receivers etc.	1111 (0.07)	1421 (0.10)	2531 (0.08)	141 (0.04)	81 (0.03)	221 (0.04)	125 (0.07)	150 (0.09)	275 (0.08)
6. self-supporting persons in non-agricultural ungainful occupations	344 (0.23)	186 (0.13)	530 (0.18)	326 (0.98)	127 (0.44)	454 (0.73)	670 (0.37)	313 (0.18)	984 (0.28)
7. earning dependants in non-agricultural ungainful occupations <sup>1</sup>	54 (0.04)	183 (0.13)	237 (0.08)	52 (0.16)	125 (0.44)	178 (0.29)	106 (0.06)	308 (0.18)	415 (0.12)
8. self-supporting persons plus earning dependants in ungainful occupations	1,390 (0.93)	1,088 (0.72)	2,428 (0.82)	557 (1.68)	328 (1.15)	887 (1.43)	1,947 (1.06)	1,366 (0.79)	3,314 (0.93)
9. self-supporting persons plus earning dependants in gainful occupations	81,132 (54.10)	37,317 (25.76)	118,449 (40.18)	17,514 (52.69)	3,060 (10.71)	20,572 (33.28)	98,647 (53.85)	40,377 (23.28)	139,022 (38.98)
10. total population	149,858 (100.00)	144,852 (100.00)	294,811 (100.00)	33,237 (100.00)	28,580 (100.00)	61,818 (100.00)	183,195 (100.00)	173,433 (100.00)	356,628 (100.00)

<sup>1</sup> Estimated.

Source: Census of India, 1951, Volume I, Part II-B and II-C, Economic Tables.

# SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

TABLE (02.2)1: NUMBER OF EMPLOYED MALES (000) BY LIVELIHOOD CLASS  
(Census of India 1951)

item	own principal means of livelihood class <sup>1</sup>										total	gainfully occupied total (IV + VIII <sub>a</sub> ) (12)
	I	II	III	IV	V	VI	VII	VIII <sub>a</sub>	VIII <sub>b</sub>			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1. self-supporting	39,038	7,367	11,064	1,046	10,379	5,341	1,678	10,594	670	87,177	85,461	
2. earning dependants	3,985	943	3,697	125	1,975	742	168	1,676	1063	13,416	13,186	
3. total employed	43,023	8,310	14,761	1,171	12,354	6,083	1,846	12,270	776	100,594	98,647	
4. percentage distribution of employed	44.77	8.26	14.67	1.16	12.28	6.05	1.84	12.20	0.77	100.00	—	
5. percentage distribution of gainfully employed	43.62	8.42	14.96	—	12.52	6.17	1.87	12.44	—	—	100.00	
6. total persons including dependants	85,107	16,250	22,384	2,436	20,031	11,235	3,115	22,627	—	183,195	—	
7. percentage distribution of total persons	46.47	8.87	12.22	1.33	10.93	6.18	1.70	12.35	—	100.00	—	
8. percentage ratio of gainfully employed in livelihood class	50.55	51.14	65.91	—	61.68	54.15	59.26	54.23	—	—	53.85	

1 Livelihood classes:

- I—Cultivators of land wholly or mainly owned
- II—Cultivators of land wholly or mainly unowned
- III—Cultivating labourers
- IV—Non-cultivating owners of land; agricultural rent-receivers
- V—Production other than cultivation
- VI—Commerce
- VII—Transport
- VIII<sub>a</sub>—Other services and miscellaneous sources
- VIII<sub>b</sub>—Deriving their means of livelihood from non-productive occupation

2 Estimated.

TABLE (02.2)2: NUMBER OF EMPLOYED FEMALES (000) BY LIVELIHOOD CLASS  
(Census of India 1951)

item	own principal means of livelihood class <sup>1</sup>										total (IV + VIII <sub>a</sub> )	gainfully employed total— (IV + VIII <sub>a</sub> )
	I	II	III	IV	V	VI	VII	VIII <sub>g</sub>	VIII <sub>a</sub>			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1. self-supporting	6,723	1,399	3,818	595	1,757	562	56	2,000	313	17,222	16,314	
2. earning dependants	8,674	1,554	8,838	150	2,389	580	57	1,970	308 <sup>2</sup>	24,521	24,062	
3. total employed	15,398	2,953	12,656	744	4,146	1,142	113	3,970	622	41,743	40,377	
4. percentage distribution of employed	36.89	7.07	30.32	1.78	9.93	2.74	0.27	9.51	1.49 <sup>2</sup>	100.00	—	
5. percentage distribution of gainfully employed	38.14	7.31	31.34	—	10.27	2.83	0.28	9.83	—	—	100.00	
6. total persons including dependants	82,220	15,368	22,415	2,885	17,641	10,077	2,506	20,322	173,433	—	—	
7. percentage distribution of total persons	47.41	8.86	12.93	1.66	10.17	5.81	1.44	11.72	100.00	—	—	
8. percentage ratio of gainfully employed in livelihood class	18.73	19.22	56.46	—	23.50	11.33	4.49	19.53	—	—	23.28	

<sup>1</sup> Livelihood classes:

- I—Cultivators of land wholly or mainly owned
- II—Cultivators of land wholly or mainly unowned
- III—Cultivating labourers
- IV—Non-cultivating owners of land; agricultural rent-receivers
- V—Production other than cultivation
- VI—Commerce
- VII—Transport
- VIII<sub>g</sub>—Other services and miscellaneous sources
- VIII<sub>a</sub>—Deriving their means of livelihood from non-productive occupation

<sup>2</sup> Estimated.



TABLE (02.2)3: NUMBER OF TOTAL EMPLOYED (000) BY LIVELIHOOD CLASS  
(Census of India 1951)

item	own principal means of livelihood class <sup>1</sup>											gainfully employed total (IV + VIII <sub>a</sub> )
	I	II	III	IV	V	VI	VII	VIII <sub>a</sub>	VIII <sub>b</sub>	(10)	(11)	(12)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(12)
1. self-supporting	45,762	8,765	14,881	1,641	12,136	5,903	1,734	12,594	984	104,390	101,775	
2. earning dependants	12,659	2,497	12,536	274	4,364	1,322	224	3,646	415	37,937	37,248	
3. total employed	58,421	11,263	27,417	1,915	16,500	7,225	1,959	16,240	1,398	142,326	139,023	
4. percentage distribution of employed	41.04	7.91	19.26	1.35	11.39	5.08	1.38	11.41	0.98	100.00	—	
5. percentage distribution of gainfully employed	42.02	8.10	19.72	—	11.87	5.20	1.41	11.68	—	100.00	—	
6. total persons including dependants	167,327	31,618	44,809	5,321	37,072	21,312	5,621	42,949	—	356,628	—	
7. percentage distribution of total persons	40.92	8.87	12.56	1.49	10.36	5.98	1.58	12.04	—	100.00	—	
8. percentage ratio of gainfully employed in livelihood class	34.91	35.62	61.19	—	43.80	33.00	34.84	37.81	—	—	—	38.08

<sup>1</sup> Livelihood classes :

I—Cultivators of land wholly or mainly owned

II—Cultivators of land wholly or mainly unowned

III—Cultivating labourers.

IV—Non-cultivating owners of land; agricultural rent-receivers

V—Production other than cultivation

VI—Commerce

VII—Transport

VIII<sub>a</sub>—Other services and miscellaneous sourcesVIII<sub>b</sub>—Deriving their means of livelihood from non-productive occupations

: Estimated.

TABLE (02 3) : PERCENTAGE OF THE GAINFULLY EMPLOYED POPULATION FOR DIFFERENT STATES

(Census of India 1951)

	area	male	female	total	total population (000)
	(1)	(2)	(3)	(4)	(5)
1. State	Uttar Pradesh	58.08	23.56	41.64	63,216
2. Zone	north India	58.08	23.56	41.64	63,216
3. State	Bihar	49.32	20.87	35.18	40,226
4. "	Orissa	56.13	18.65	37.20	14,646
5. "	West Bengal	53.98	10.89	34.07	24,810
6. "	Chandernagar	53.99	8.21	34.09	50
7. "	Assam	53.39	30.28	42.58	9,044
8. "	Manipur	52.16	50.43	51.27	578
9. "	Tripura	53.85	28.49	41.80	639
10. "	Sikkim	61.30	53.05	57.39	138
11. Zone	east India	52.22	19.08	36.11	90,130
12. State	Madras	46.09	12.84	29.90	57,016
13. "	Mysore	46.33	8.96	28.13	9,075
14. "	Travancore-Cochin	48.92	21.71	35.27	9,280
15. "	Coorg	53.40	20.34	38.40	229
16. Zone	south India	46.50	14.26	30.39	75,601
17. State	Bombay	53.52	28.91	41.65	35,956
18. "	Saurashtra	52.05	28.67	40.51	4,137
19. "	Kutch	53.95	29.04	41.02	568
20. Zone	west India	53.39	28.92	41.55	40,661
21. State	Madhya Pradesh	62.58	46.76	54.70	21,248
22. "	Madhya Bharat	56.02	23.80	40.54	7,954
23. "	Hyderabad	58.16	30.45	44.46	18,656
24. "	Vindhya Pradesh	58.59	32.05	45.65	3,575
25. "	Bhopal	55.44	24.11	40.48	836
26. Zone	central India	59.58	36.17	48.04	52,268
27. State	Rajasthan	59.46	38.22	49.28	15,291
28. "	Punjab	45.69	18.53	37.92	12,390
29. "	Himachal Pradesh and Bilaspur	66.61	50.56	58.93	1,109
30. "	PEPSU	58.07	13.87	37.85	3,494
31. "	Delhi	57.08	7.01	35.33	1,744
32. "	Ajmer	59.15	35.23	47.67	693
33. Zone	north-west India	57.70	27.78	43.65	34,722
34. State	Andaman and Nicobar Islands	72.23	37.82	59.00	31
35.	all-India	53.85	23.28	38.98	356,628

## SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

on non-agricultural occupations also, 39 per cent are gainfully employed, but 57 per cent of males and 19 per cent of females. Of the total gainfully employed males 67 per cent are in agricultural occupations and 33 per cent in non-agricultural occupations; a higher proportion of gainfully employed females, 77 per cent are in agricultural occupations and 23 per cent in non-agricultural occupations. Of the total male population again, 36 per cent are gainfully employed in agricultural and 18 per cent in non-agricultural occupations, of the total female population, 18 per cent are gainfully employed in agricultural and 5 per cent in non-agricultural occupations.

02.8. The estimated gainfully employed population by sex in the different States of India calculated from Census 1951 on the same basis as above is shown in Table (02.3). It will be observed that within a population zone, the States show a good deal of variation in proportions gainfully employed, particularly among females, for example, the proportion of gainfully employed females ranges from 10.89 per cent in West Bengal to 50.43 per cent in Manipur in east zone. Within south zone the States are closer together in regard to the proportion of the employed males, Madras returning 46.09 per cent and Travancore-Cochin 48.92 per cent. The employed female proportion fluctuates from 8.96 per cent in Mysore to 21.71 per cent in Travancore-Cochin in south zone, and from 7.01 per cent in Delhi to 50.56 per cent in Himachal Pradesh in north-west zone.



## APPENDIX THREE

## EXPECTANCY OF WORKING LIFE

03.1. With the usual life table notations, the complete expectation of life at age  $x$  is,

$$e_x^0 = \frac{\int_x^\infty l_{x+t} dt}{l_x} = \frac{\sum_x^\infty L_x}{l_x}$$

where  $l_x$  is the number of persons attaining exact age  $x$  and  $L_x$  the number of persons aged  $x$  last birthday, out of a radix  $l_0$ . If  $p_x$  be the proportion in the labour force at exact age  $x$ , then the average years in labour force or the expectancy of working life is defined as

$$e_x^\omega = \frac{\int_x^\infty l_{x+t} \cdot p_{x+t} dt}{l_x} = \frac{\sum_x^\infty L_x p_{x+\frac{1}{2}}}{l_x} = \frac{\sum \left[ \left( \sum_x^{x+m} L_x \right) p_{x:x+m} \right]}{l_x},$$

where  $p_{x:x+m}$  is the labour force proportion for the age group  $x$  to  $x+m$  last birthday. The average age at separation from labour force for persons aged  $x$  is given by  $x+e_x^\omega$ , while their average age at death is  $x+e_x^0$ .

03.2. The functions  $l_x$ ,  $L_x$  and  $e_x^0$  for Indian males and females are available in the life tables in *Census of India, 1951, Paper No. 2, 1954*. The  $p_x$  values were however, not calculated in single years of age from NSS 6th and 7th rounds. The population and the labour force in these NSS rounds were tabulated with the 2-6 system of age-groupings to minimize errors of age reporting; subsequently the population, the labour force, and the labour force proportions were estimated only for the broad age groups 0-14, 15-19, 20-24, 25-34, 35-44, 45-64 and 65-above, by the use of suitable interpolation formulae. A series of values of  $p_x$  for individual ages could be constructed by graduation, but such refinement was considered out of place in view of the nature of the data and the purpose in hand. The function  $e_x^\omega$  was, therefore, calculated for the specified ages 15, 20, 25, 35, 45 and 65, by using the formula,

$$e_x^\omega = \frac{\sum \left[ \left( \sum_x^{x+m} L_x \right) p_{x:x+m} \right]}{l_x},$$

the summation outside the square brackets extending from the base age  $x$  over the unequal intervals  $m$  equal to 15, 5, 10, 20 and an open interval to the end of life.

## SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

03.3. The average years in labour force and the average age at separation from labour force, for males and females separately, derived by the application of this formula to appropriate life table population and labour force proportions, have been shown in this Report. The average years in labour force for the USA had been worked out by Durand<sup>1</sup> on somewhat similar basis using individual age-labour force proportions for the age range 25-75. It is worthwhile to mention here that a set of chain type of 'reversionary' formulae, for those currently in the labour force and those outside, as well as for the females by marital status, would have been much more meaningful.

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<sup>1</sup> Durand, John D. (1948) : *The Labor Force in the United States, 1890-1960*. Social Science Research Council, New York.

## APPENDIX FOUR

### INDUSTRY-OCCUPATION CLASSIFICATION

04.1. A system of International Standard Industrial Classification (ISIC) was suggested by the Economic and Social Council of the United Nations in 1948. The ISIC system suitably amended into the Indian Census Economic Classification (ICEC) to suit Indian conditions was adopted in Census 1951.

04.2. Further modification of the classification was considered necessary by the NSS to straighten certain conceptual anomalies arising from mix-up between industry and occupation: the classification at the same time needed greater orientation towards Indian conditions. Detailed descriptions of the industry and occupation of persons falling in the sample were collected in the earlier NSS rounds, and the information analysed with this view. On basis of the experience gained, an industry-occupation classification was introduced by the Indian Statistical Institute (ISI) for the NSS in July 1954. In 1955, following the deliberations of a Working Party, the Central Statistical Organisation (CSO) recommended a draft standard industrial and occupational classification. Considering the CSO recommendations, the latest basic ILO classification and the subsequent experience gained in the NSS, a revised ISI industry-occupation classification was drawn up in July 1956 for use in NSS 11th round.

04.3. The distinction between the concepts of industry and occupation should be clear. The industry of a gainfully employed person is the branch of economy in which he is engaged in producing either goods or services: his occupation specifies the type of function which he performs in that particular branch of economy. A three-tier grouping system was adopted for classification of industry and occupation. The first tier consisted of a number of broad classes named 'divisions', not exceeding ten: the 'division' is then split up into 'major groups', and each 'major group' into an appropriate number of ultimate groups. Thus more than 300 ultimate groups for industry and about 200 ultimate groups for occupation were provided in the latest classification adopted for the NSS.

04.4. Some of the industry and occupation groups shown in the tables of this Report are identical with the ultimate groups of the classification, while other broad industry and occupation groups of the Report comprise of a number of similar ultimate groups of the classification pooled together. To give an idea of what the broad industry and occupation groups made in the Report stand for, the definitions and constituent ultimate groups of some of the broad groups used, the coverage of which is not clear from the title, are given below :



## SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION

### INDUSTRY

- (1) *Other agricultural production* : Production of fruits and other plantation wood bamboo cane reeds thatching grass and production of juice by tapping palms.
- (2) *Production of plantation crops* : Production of tea rubber and plantation tobacco in plantation production of gummy condium and cotton.
- (3) *Forestry, Fishery, Livestock* : Production of rubber gum, forest fish farming production of pearls, oyster shells production of and raising livestock for milk and other animals for slaughter poultry farming rearing of bees for the production of honey rearing of silkworm and production of silk.
- (4) *Manufacture of food products* : Production of rice, etc. flour, etc. by milling and dehushing production of sugar jelly bakery, etc. butter, liquor and beverages and manufacture of tobacco products.
- (5) *Construction and sanitary services* : Construction and maintenance of building, road, railway, bridge, tunnel, telegraph and telephone lines, waterways and water reservoirs, canal, tank, tubewell and well.
- (6) *Trade and commerce* : Enterprises dealing wholesale or retail with all types of consumer goods, essential commodities and luxury goods.
- (7) *Public service* : Services in police, armed force, navy, air force and services in administrative departments and government offices. The service industry group should not be confused with service occupation classifications.
- (8) *Professional services* : Educational services, medical and health services, religious services, legal services, engineering services, business services rendered by publicity agencies, recreation services (cinema, theater, dance, music, circus, etc.), services rendered by hotel, boarding house, laundry, and saloon; hiring out services of durable goods. In some tables public services and professional services have been merged together to form a single broad industry group.

### OCCUPATION

- (1) *Administrative and technical work* : Management, auditing, executive and secretarial work, engineering work, research work, fine arts and literary writings, legal professions and clerical work. This group excludes teaching and medical work.
- (2) *Operatives and artisans* : Workers engaged in operation of power equipment or manually operated plants and machinery (excluding supervisory work), smiths, drivers, boatmen, technical apprentices, artisans (excluding washerman, barber, cook and weaver), craftsmen, sawyer, workers engaged in general engineering work.

- (3) *Farmer* : (4) *Cultivator* : (5) *Share-cropper* : Farmer, cultivator, and share-cropper are associated with production of crop only. Although the functional distinction between farmer, cultivator and share-cropper is of little significance, they have been shown separately as ultimate groups in NSS classification owing to their general importance and weight. By the NSS definition a farmer is a tiller who cultivates his own land mainly with hired labour. A cultivator is one who cultivates land mainly owned by him and sometimes land taken on lease or share-cropping system, with the help of other household members and partly with hired labour. A share-cropper mainly takes up cultivation of others' land on a crop-sharing basis, and cultivates without hired labour. By and large, the type of attachment to land determined in practice the occupation.
- (6) *Forestry, fishery, livestock workers* : The wood cutters, plantation labour, gardeners, fishermen, raisers and rearers of animals, cattle grazer and herdsmen.
- (7) *Manufacturer of food products* : Husker and parcher of food grains and pulses; crusher of oil seeds, confectioner, gur and candy makers, baker, producer of indigenous liquor and makers of biri and other tobacco products.
- (8) *Manufacturer of textiles* : Ginner and cleaner of fibre, spinner, weaver, dyer and printer, carder and reeler.

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PART 4

### SURVIVAL RATES OF THE INDIAN CARP (*CATLA CATLA*, *LABEO ROHITA*, *CIRRHINA MREGALA*) FROM FIRST TO FOURTH WEEK OF LIFE UNDER DIFFERENT EXPERIMENTAL TREATMENTS

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**SUMMARY.** Two experiments were carried out on Indian carp (*Catla catla*, *Labeo rohita* and *Cirrhina mrigala*) to determine whether the survival rate could be enhanced by certain experimental treatments. In the first experiment, treatments with antibiotics and vitamin E complex, including  $B_{12}$ ,  $P_{12}$ , were compared with the untreated control; in the second experiment, treatments with vitamin B complex, including  $B_{12}$ , and organic manure were compared with the untreated control. Differences in the distributions of survival values obtained for different treatments were compared by the Kolmogorov-Smirnov test. Survival during the first month of life was found to be enhanced significantly by treatments with antibiotics and vitamin B complex, including  $B_{12}$ . Using Kendall's coefficient of concordance it was demonstrated that survival was inversely related to initial number in the majority of treatments during the first two weeks of life. Regression of final proportion surviving on initial number accounted for over 70 percent of the within treatment variation.

#### INTRODUCTION

During the past decade the number of scientific investigations on fish culture has been steadily increasing, with growing awareness of the role of fish protein in improving human diet in India. Development of scientific methods of fish culture promises to be of economic value, particularly in such areas as West Bengal, Orissa and Assam, with their abundance of small tanks, large pools (*jheel*) and impounded waters. These water sources can permit increased protein production through fish culture without heavy expenditure in land or capital.

Culture of fresh water carp under commercial conditions has been receiving consideration. Among investigations in this line, the work of Hora (1947, 1949, 1950a, 1950b) has made contributions to the methods of pond culture, specifying requirements, manuring practices, etc. The potential value of such work may be realised if the market position of the carp is reviewed. According to the Report on the Marketing of Fish in India (Government of India, 1946),\* the carp make up 34 percent of the marketable surplus of fresh water fish, or about eighteen million pounds, and are the single largest group of marketable fresh water fishes.

\* Report on the Marketing of Fish in India, Marketing Series No. 52, Government of India, (1946).

Review of the literature shows that most work has been devoted to the culture of fry and fingerlings in field conditions, with emphasis on nursery management. Investigations of spawn have been concerned with spawning practices of the carp, particularly the factors inducing carp to spawn. A survey of the available literature has not so far revealed investigations on the survival rate of carp during the early period of life, and treatments which may increase survival. The potential importance of such investigations lies not only in the potential market of the adult carp as part of human diet, but also in the necessity of transporting carp during the early period of life. The carp are caught at the spawning grounds, and are transported to Calcutta, where the commercial spawn growers purchase them. During this period, mortality is high, hence reducing ultimate production of carp. Methods developed to increase survival during this period should also, therefore, be of economic value.

To investigate the survival rate of carp during the early period of life, and to determine if certain treatments would increase survival, a series of laboratory experiments were conducted in the Indian Statistical Institute in the months of July and August in 1956 and 1957 on Indian fresh water carp (*Catla catla*, *Labeo rohita*, *Cirrhina mrigala*).

#### EXPERIMENTAL DESIGNS

*Experiment 1* (1956). In Experiment 1 three experimental treatments were utilized with five replications of each treatment. The fifteen experimental units so defined were randomly distributed in the laboratory in three rows with five units in each row. Measurements were taken for 21 days. Fluorescent tube lights were used to ensure equal lighting throughout the laboratory. Fans were arranged to maintain constant temperature and distribution of air in the laboratory.

*Experiment 2* (1957). In Experiment 2 three treatment groups were utilized, arranged according to a randomized block design. With the three treatments represented in each block, the design adopted five blocks, and the entire design was replicated twice. There were, therefore, a total of thirty experimental units, ten for each treatment. Measurements were taken for 22 days. Lighting and fans were arranged to satisfy the same conditions as in Experiment 1.

#### MATERIALS AND METHODS

For Experiment 1, one day old carp (*Catla catla*, *Labeo rohita*, *Cirrhina mrigala*) were procured from the same source. Upon receipt in the laboratory, it was intended to assign an equal number of the carp to each experimental unit. Exact enumeration of the carp was not feasible due to their minute size, and a sampling procedure of allocation was adopted instead. Equal quantities of pond water, each containing one teaspoon of spawn, were assigned randomly to the experimental units. Subsequent enumerations of the spawn would check the accuracy of this sampling procedure.

Each experimental unit consisted of an earthen bowl or *gamla* of 16" diameter containing 9 litres of water. All *gamlas* used were of the same size, containing the same quantity of pond water from the same source. The water was changed every 24 hours to prevent accumulation of waste products which might injure the carp and affect their survival. Water temperature and pH were recorded daily.



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Experimental data were collected by completely enumerating the dead carp each day and enumerating the surviving live carp at the conclusion of the experiment. These counts were taken first by inducing a water current in the *ponda* by an artificial centrifugal force, and second, withdrawing the dead carp with a glass pipette. Separate fresh pipettes were used for each experimental unit to prevent contamination of one treatment by another. The dead carp were then placed on a flat paper surface for enumeration. Daily counts were taken for the 21 days of the experiment, and the final total of dead and live spawn reconstructed the number of spawn initially introduced.

The spawn were fed live *Daphnia*, given 10cc by volume each day to each experimental unit. To determine whether this ration was sufficient, a check was made each day to see if any live *Daphnia* remained. It was found that there were always some *Daphnia* remaining.

The three experimental treatments were as follows: *A* (control), *B* (antibiotics); and *C* (vitamin B complex with vitamin B<sub>12</sub>).

In treatment *A*, the water of each experimental unit was left untreated. In treatment *B*, the water of each experimental unit received 270cc of the following antibiotic mixture daily:  $\frac{1}{2}$  gram crystalline dehydro-streptomycin sulphate,  $\frac{1}{2}$  gram crystalline streptomycin sulphate; 300,000 units procaine penicillin G; 100,000 units soluble penicillin G; added to 100cc distilled water. Sufficient quantities of this dosage were made to permit treatment of 30cc per litre of water containing the spawn. As each experimental unit contained 9 litres of water, 270cc were given. In treatment *C*, the water of each experimental unit received the following dosage of vitamin B complex daily: 5 $\mu$ g crystalline vitamin B<sub>12</sub>; 3mg vitamin B<sub>1</sub> (Aneurine Hydrochloride); 30 mg nicotinamide; 1 mg riboflavin; 1 mg calcium pantothenate; 0.5 mg pyridoxine hydrochloride.

For Experiment 2, the carp, allocation procedure, experimental units, food, lighting and fans were identical in principle with those described for Experiment 1. The three experimental treatments were as follows: *A* (control), *B* (manure) and *C* (vitamin B complex with vitamin B<sub>12</sub>). Treatments *A* and *C* were identical with those of Experiment 1. The water of each experimental unit in treatment *B* received  $\frac{1}{2}$  gram of cowdung per day.

### RESULTS

Tabular summaries of the data are presented in Tables 1 to 3, and statistical tests of significance in Tables 4 to 11. Figures 1 to 4 represent graphically the survival rates given in Tables 1 and 3.

The daily survival rate and cumulative survival rate were computed for each experimental treatment, summing over the within treatment replications, from the number alive and number dead on each day of the experimental period. The daily survival rate was obtained by dividing the number alive on each day by the number alive on the preceding day. The daily survival rates are presented graphically in Figures 1 and 3 for Experiments 1 and 2 respectively. The cumulative survival rate was computed by dividing the number alive on each day by the initial number.



The cumulative survival rates are represented graphically in Figures 2 and 4, for Experiments 1 and 2 respectively.

Statistical significance of the experimental treatments was tested by means of a homogeneity chi square, with results given in Table 4, and the Kolmogorov-Smirnov test of significance for two distributions, with obtained values reported in Table 5. These statistical tests are based on proportions obtained for each replication, given in Table 3.

For Experiments 1 and 2, Table 3 presents the final proportion surviving in terms of the initial number introduced, for each replication. Statistical analysis of this data included computation of Kendall's coefficient of concordance,  $S$ , for the rank orders of final proportion surviving and of initial number, given in Table 6. To determine the significance of the regression of final proportion surviving on initial number, variance ratios were computed which are given in Table 8. In Table 9, the estimated values of  $\alpha$  and  $\beta$ , and the estimated variances of  $\alpha$  and  $\beta$  are presented.

To examine the proportion surviving in relation to initial number for successive periods through the experiment; for an initial, middle, and final period the proportions surviving were computed, taking the initial number of the particular period as a base. The data and proportions are presented in Tables 10 and 11 for Experiments 1 and 2. Values for the coefficients of concordance for these data are given in Table 7.

### DISCUSSION

At least three general features of the data in both experiments merit discussion: (1) survival rates in the control groups; (2) differences between treatments in survival rates; and (3) survival rate as influenced by the initial number of carp per experimental unit.

The survival rates in the control groups of Experiments 1 and 2 not only provide the basis for comparison for the experimental treatments, but also suggest the nature of survival rates under commercial conditions. (Considering first the daily survival rate, Figures 1 and 3 may be examined. In both experiments, there is a drop in survival rate lasting from 3 to 5 days, reaching its lowest point at the midpoint of the interval. The rate then gradually increases, levelling off to a plateau. While this drop in survival is common to both experiments, the time at which it occurs is different in the two experiments. The reason for this lack of agreement is not suggested by the data. It may be noted, however, that with respect to water temperature and pH, the low survival interval did not differ from the remaining period in either experiment. In Experiment 1, the range for the water temperature was 26.5°C to 27.5°C in both the low survival and remaining periods; in Experiment 2, the range was 26°C to 28°C in both periods. The pH in Experiment 1 ranged from 6.9 to 7.2 in both periods, and from 7.2 to 7.7 in both periods of Experiment 2. The cumulative survival rates are shown in Figures 2 and 4. In Figure 4, the fall in cumulative survival is more rapid than in Figure 2, due to the earlier onset of the interval showing a drop in the survival rate.

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Differences between treatments in survival rates are also illustrated by Figures 1-4, with the supporting data given in Tables 1 and 2. The results of each experiment will be discussed separately, after which comparisons between the two will be made.

In Experiment 1, the effect on survival of antibiotic and vitamin B complex with  $B_{12}$  treatments was investigated. For both experimental treatments, the fall in survival is less marked than in the control group (see Figure 1) resulting in a higher final survival rate (see Figure 2). Before determining whether these differences were statistically significant, the equality of the survival values within treatments was tested. Using a chi-square test of homogeneity, the hypothesis of equality was rejected (see Table 4). Noting that the initial number is a random variable having the same distribution in all the cases, the survival rates under each experimental treatment can be considered as observations on the same random variable. Therefore, to test the significance of the difference between treatments, the distributions of the survival values obtained for the different treatments were compared by the Kolmogorov-Smirnov test. Comparing the two treatments at a time, it was found that both the antibiotic and vitamin B complex treatments differed significantly from the control, but not from each other (see Table 5).

Considering first the effect of the antibiotic treatment on survival of Indian carp during the first three weeks of life, the relevant literature may be reviewed. Previous workers have investigated the effect of antibiotics on survival in the fry and fingerling of trout (*Salmo trutta*). There has been no work reported dealing with the early period following hatching, nor with Indian carp. Wolf (1952) reported slightly higher survival using chlortetracycline with vitamin  $B_{12}$  and terramycin. In the work of Phillips *et al* (1952), who used chlortetracycline, oxytetracycline, penicillin, bacitracin, and vitamin  $B_{12}$ , the antibiotics did not produce any beneficial effect on survival. Snieszko's (1957) review of the literature shows further conflicting results in this area. While the present data are in agreement with Wolf's, it may be noted that in his work, the antibiotics were combined with vitamin  $B_{12}$ . Which factor was effective was not, therefore, shown. The effect of vitamins on survival has been examined for trout by Phillips and Brockway (1957). They report some increase in survival with a vitamin B complex treatment, which is in agreement with the results of this experiment.

Experiment 2 was designed to confirm the effect of vitamin B complex with  $B_{12}$  and to examine the effect of manuring treatment on survival. It may be noted that manuring has been a practice recommended to commercial spawn culturists in India (e.g. Hora, 1943). For the data of Experiment 2, the final proportions surviving for each treatment, and replication thereof, were analysed in the same manner as for the preceding experiment. As the within treatment survival values could not be interpreted as equal (see Table 4), the differences between treatments were again examined using the Kolmogorov-Smirnov test (see Table 5). As in the previous experiment, treatment with vitamin B complex produced results significantly different from those of the control. However, the use of cowdung in the manuring treatment did not show results differing significantly from the control. Previous research in



this laboratory showed that increasing the dosage of cowdung has a detrimental effect on survival (unpublished data).

Treatment with vitamin B complex with  $B_{12}$ , in both experiments and with antibiotics in the first experiment, resulted in a survival rate significantly higher than that of the control (see Figures 2 and 4, and Table 5). This was apparently due to protection afforded by the treatment during the interval showing a sharp drop in survival rate. After that interval had passed, the treatment did not show any further advantage, as is shown by the daily survival rates (see Figures 1 and 3). A hypothesis suggested by these results is that age of the carp may be a significant factor affecting the probability of survival. This hypothesis is also suggested by further analysis of the data described below.

A third feature of the data is the effect of the initial number of carp in a replication on the final proportion surviving. While the present experiments were not designed to test this effect, its possible presence in the data warranted statistical analysis. Table 3 shows, in general, that as initial number decreases, proportion surviving increases, which is in agreement with data reported by Andrewartha and Birch (1954). If the replications within a treatment are ranked in order of initial number, and rank orders are also assigned in terms of final proportion surviving, Kendall's coefficient of concordance can be applied to determine the degree of agreement between the two sets of ranks. The values of these coefficients for the present data are given in Table 6. As these results indicated that, in the majority of treatments, survival is not independent of the initial number, an attempt was made to fit a curve for final proportion surviving ( $r$ ) in relation to initial number ( $n$ ). For the replications under the same treatment, the following model was able to explain most of the variation:

$$E(r/n|n) = \alpha + \beta/n; \quad V(r/n|n) = k/n$$

where  $E$  stands for expectation,  $r$  and  $n$  are as defined above,  $\alpha$  and  $\beta$  for the point of origin and regression coefficient as usually defined,  $V$  for variance and  $k$  as a constant. To determine whether the regression coefficients account for a significant proportion of the variation, the hypothesis  $\beta = 0$  was tested by analysis of variance for each experimental treatment. The variance ratios, reported in Table 8, were significant for all treatments in both experiments, with the exception of the antibiotic treatment. This analysis showed that for all treatments, excepting the antibiotic treatment of Experiment 1, regression accounts for over 70 percent of the variation. The estimated values of  $\alpha$  and  $\beta$ , and their variance, are given in Table 9.

While the above analysis shows that in the majority of treatments proportion surviving is inversely related to initial number, it does not indicate whether this occurs consistently throughout the experiment, or only during a limited period. In order to obtain information on this point, the experimental period was divided up into three parts. The proportion surviving was computed for each period, with the initial number of that period as the base. Tables 10 and 11 give this data for Experiments 1 and 2 respectively. Rank orders were assigned as described previously to obtain coefficients of concordance for the different experimental periods. This analysis (see Table 7) showed that, in the first experiment, proportion surviving

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was independent of initial number for the first five days and the last nine days of the experiment, but was not independent of initial number during the intervening seven days. In the second experiment, independence was found for all treatments during the last eight days, with lack of independence for the first seven days. During the intervening seven days, this independence was found only for the vitamin B complex treatment. If these results are examined in relation to Figures 1 and 3, it can be seen that the periods showing a significant coefficient of concordance correspond to the interval of low survival. In both of the experiments there is no demonstrable relationship between initial number and proportion surviving after two weeks of life. This result suggests first, that there is an initial period of high mortality which corresponds to the initial period of rapid growth, and second, it is only during this period that the initial number bears an inverse relationship to survival rate. While the mechanism for such results is not revealed by these data, it may be noted that the period of most rapid rate of growth has been shown in other species to be one of susceptibility to various adverse factors and low survival (e.g. in chickens, as discussed by Heuser, 1946). Thus, the higher rate of survival after the second week of life noted in these experiments may be due to the passing of the high initial spurt of growth, during which the probability of survival decreases as number increases. Some suggestions may be advanced to account for these results in terms of the experimental treatments. As was noted earlier in this discussion, the vitamin B complex and antibiotic treatments maintained a higher survival rate than the control and manuring treatments only during this period of high mortality. It was suggested there that these treatments afforded some protection. It would be expected that the mechanisms of such a protection would be different for the two treatments. The antibiotics may check the growth of bacteria, hence reducing such factors as infections, while the vitamin B complex may have advantageous effects with respect to growth and metabolic processes. These mechanisms have also been alluded to by Phillips and Brockway (1957), though not specifically in reference to this particular period of high growth. It should be noted that these suggestions are only advanced as hypotheses, which require experimental corroboration.

### CONCLUSIONS

During the initial period of life of Indian carp (*Catla catla*, *Labeo rohita*, *Cirrhina mrigala*) the survival rate of the untreated controls showed a sharp drop during a three to five day interval, following which it gradually increased, levelling off within four days after the point of lowest survival.

Experimental treatments with antibiotics and vitamin B complex with vitamin B<sub>12</sub> significantly enhanced survival rate in comparison with the untreated controls. These treatments were effective only during the period of low survival.

A manuring treatment, which is a recommended practice for commercial spawn culture in India, did not demonstrate any appreciable difference from the untreated controls in survival rate.

Analysis showed that survival rate is inversely related to initial number; however, this relationship did not seem to be valid after the first two weeks of life.



TABLE 1. DAILY AND CUMULATIVE SURVIVAL RATES FOR EXPERIMENT I

day	treatment									
	A : control					B : antibiotic				
	(1 <sub>t</sub> )	(2 <sub>t</sub> )	(3 <sub>t</sub> )	(4 <sub>t</sub> ) - (2 <sub>t</sub> ) - 11604	(5 <sub>t</sub> ) = (2 <sub>t</sub> ) - (2 <sub>t-1</sub> )	(6 <sub>t</sub> )	(7 <sub>t</sub> )	(8 <sub>t</sub> )	(9 <sub>t</sub> )	(10 <sub>t</sub> )
	number of live fish	number of deaths	cumulative survival rate	daily survival rate	number of live fish	number of deaths	cumulative survival rate	daily survival rate	number of live fish	cumulative survival rate
0	11604	169	1.0000	—	10199	80	1.0000	—	10950	1.0000
1	11435	946	0.9845	0.9854	10119	8	.9922	.9922	10863	.9922
2	10489	802	0.9039	0.9173	10111	129	.9914	.9902	10841	.9900
3	9687	606	0.8348	0.9235	9992	53	.9797	.9882	10669	.9742
4	9081	487	0.7826	0.9374	9929	76	.9735	.9937	10610	.9689
5	8594	953	0.7406	0.9464	9853	259	.9661	.9923	10399	.9597
6	7641	2019	0.6585	0.8891	9594	595	.9407	.9737	10217	.9330
7	5622	589	0.4845	0.7358	8999	566	.8823	.9380	9442	.8923
8	5033	1294	0.4337	0.8952	8433	2056	.8268	.9371	8243	.7528
9	3739	1514	0.3222	0.7429	6377	1701	.6252	.7562	5173	.4721
10	2225	1372	0.1917	0.5951	4676	1881	.4585	.7933	3418	.3121
11	853	320	0.0735	0.3834	2795	341	.2740	.5977	2776	.2735
12	533	72	0.0459	0.6248	2451	307	.2403	.8769	2468	.2254
13	461	29	0.0397	0.8649	2144	149	.2102	.8747	2297	.2008
14	432	15	0.0372	0.9371	1995	40	.1956	.9305	2200	.2009
15	417	0	0.0359	0.9653	1955	61	.1917	.9799	2137	.1952
16	417	3	0.0359	1.0000	1894	54	.1857	.9688	2086	.1903
17	414	0	0.0357	0.9928	1840	32	.1804	.9715	2053	.1875
18	414	1	0.0357	1.0000	1808	43	.1773	.9826	2039	.1862
19	413	5	0.0356	0.9976	1765	42	.1730	.9762	2017	.1842
20	408	2	0.0352	0.9879	1723	26	.1689	.9762	2009	.1835

TABLE 2. DAILY AND CUMULATIVE SURVIVAL RATES FOR EXPERIMENT 2

treatment																										
A: control										B: manure					C: vitamin B complex with vitamin B <sub>12</sub>											
day	number of live fish	number of deaths	curru- lative survival rate	daily survival rate	(2 <sub>t</sub> )	(4 <sub>t</sub> ) = 59.53	(5 <sub>t</sub> ) = (2 <sub>t</sub> ) / (4 <sub>t</sub> )	(6 <sub>t</sub> )	number of live fish	number of deaths	curru- lative survival rate	daily survival rate	(6 <sub>t</sub> )	(7 <sub>t</sub> )	(8 <sub>t</sub> ) = 57.62	(9 <sub>t</sub> ) = (6 <sub>t</sub> ) / (8 <sub>t</sub> )	number of live fish	number of deaths	curru- lative survival rate	daily survival rate	(10 <sub>t</sub> )	(11 <sub>t</sub> )	(12 <sub>t</sub> )	(13 <sub>t</sub> ) = (10 <sub>t</sub> ) / (11 <sub>t</sub> )		
(1 <sub>t</sub> )	(2 <sub>t</sub> )	(3 <sub>t</sub> )	(4 <sub>t</sub> ) = 59.53	(5 <sub>t</sub> ) = (2 <sub>t</sub> ) / (4 <sub>t</sub> )	(6 <sub>t</sub> )	(7 <sub>t</sub> )	(8 <sub>t</sub> ) = 57.62	(9 <sub>t</sub> ) = (6 <sub>t</sub> ) / (8 <sub>t</sub> )	(10 <sub>t</sub> )	(11 <sub>t</sub> )	(12 <sub>t</sub> )	(13 <sub>t</sub> ) = (10 <sub>t</sub> ) / (11 <sub>t</sub> )	(14 <sub>t</sub> )	(15 <sub>t</sub> )	(16 <sub>t</sub> )	(17 <sub>t</sub> )	(18 <sub>t</sub> )	(19 <sub>t</sub> )	(20 <sub>t</sub> )	(21 <sub>t</sub> )	(22 <sub>t</sub> )	(23 <sub>t</sub> )	(24 <sub>t</sub> )	(25 <sub>t</sub> )		
0	5953	310	1.0000	—	5762	316	1.0000	—	7381	495	1.0000	—	7381	495	1.0000	—	7381	495	1.0000	—	7381	495	1.0000	—	7381	495
1	5643	929	.9479	.9479	5446	844	.9452	.9452	6886	749	.9329	.9329	6886	749	.9329	.9329	6886	749	.9329	.9329	6886	749	.9329	.9329	6886	749
2	4714	1345	.7919	.8354	4602	1432	.7987	.8450	6137	801	.8315	.8315	6137	801	.8315	.8315	6137	801	.8315	.8315	6137	801	.8315	.8315	6137	801
3	3369	1130	.5659	.7147	3170	918	.5502	.6888	5336	601	.7229	.8095	5336	601	.7229	.8095	5336	601	.7229	.8095	5336	601	.7229	.8095	5336	601
4	2239	567	.3761	.6646	2252	527	.3908	.7104	4735	496	.6415	.8874	4735	496	.6415	.8874	4735	496	.6415	.8874	4735	496	.6415	.8874	4735	496
5	1672	253	.2842	.7468	1725	192	.2994	.7059	4237	312	.5740	.8952	4237	312	.5740	.8952	4237	312	.5740	.8952	4237	312	.5740	.8952	4237	312
6	1419	149	.2384	.8488	1333	109	.2661	.8886	3927	216	.5320	.9264	3927	216	.5320	.9264	3927	216	.5320	.9264	3927	216	.5320	.9264	3927	216
7	1270	76	.2133	.8950	1424	64	.2471	.9289	3711	238	.5028	.9470	3711	238	.5028	.9470	3711	238	.5028	.9470	3711	238	.5028	.9470	3711	238
8	1194	85	.2006	.9402	1300	94	.2361	.9551	3473	192	.4765	.9447	3473	192	.4765	.9447	3473	192	.4765	.9447	3473	192	.4765	.9447	3473	192
9	1109	57	.1863	.9288	1266	61	.2197	.9308	3281	135	.4445	.9447	3281	135	.4445	.9447	3281	135	.4445	.9447	3281	135	.4445	.9447	3281	135
10	1052	74	.1767	.9486	1205	62	.2091	.9518	3146	145	.4262	.9589	3146	145	.4262	.9589	3146	145	.4262	.9589	3146	145	.4262	.9589	3146	145
11	978	53	.1643	.9297	1143	72	.1984	.9485	3001	116	.4069	.9639	3001	116	.4069	.9639	3001	116	.4069	.9639	3001	116	.4069	.9639	3001	116
12	925	76	.1554	.9458	1071	77	.1859	.9370	2885	67	.3909	.9613	2885	67	.3909	.9613	2885	67	.3909	.9613	2885	67	.3909	.9613	2885	67
13	849	77	.1426	.9178	994	81	.1725	.9281	2818	92	.3818	.9548	2818	92	.3818	.9548	2818	92	.3818	.9548	2818	92	.3818	.9548	2818	92
14	772	50	.1297	.9093	913	42	.1585	.9185	2786	60	.3663	.9674	2786	60	.3663	.9674	2786	60	.3663	.9674	2786	60	.3663	.9674	2786	60
15	722	31	.1213	.9352	871	30	.1512	.9540	2666	35	.3612	.9780	2666	35	.3612	.9780	2666	35	.3612	.9780	2666	35	.3612	.9780	2666	35
16	691	20	.1161	.9571	841	22	.1459	.9655	2635	44	.3570	.9884	2635	44	.3570	.9884	2635	44	.3570	.9884	2635	44	.3570	.9884	2635	44
17	671	17	.1127	.9711	819	29	.1421	.9738	2591	31	.3510	.9857	2591	31	.3510	.9857	2591	31	.3510	.9857	2591	31	.3510	.9857	2591	31
18	654	13	.1099	.9747	790	21	.1371	.9645	2560	33	.3468	.9880	2560	33	.3468	.9880	2560	33	.3468	.9880	2560	33	.3468	.9880	2560	33
19	641	4	.1077	.9804	769	20	.1335	.9734	2527	35	.3424	.9871	2527	35	.3424	.9871	2527	35	.3424	.9871	2527	35	.3424	.9871	2527	35
20	637	9	.1070	.9838	740	11	.1300	.9740	2492	26	.3376	.9871	2492	26	.3376	.9871	2492	26	.3376	.9871	2492	26	.3376	.9871	2492	26
21	628	5	.1055	.9859	738	13	.1281	.9853	2466	21	.3341	.9886	2466	21	.3341	.9886	2466	21	.3341	.9886	2466	21	.3341	.9886	2466	21
22	623		.1047	.9920	725		.1258	.9824	2445				2445				2445				2445				2445	

TABLE 3. FINAL PROPORTION SURVIVING IN RELATION TO  
INITIAL NUMBER INTRODUCED

treatment								
A control				B antibiotic			C. vitamin B complex & B <sub>12</sub>	
initial number X <sub>1</sub>	number surviving Y <sub>1</sub>	proportion surviving Y <sub>1</sub> /X <sub>1</sub>	initial number X <sub>2</sub>	number surviving Y <sub>2</sub>	proportion surviving Y <sub>2</sub> /X <sub>2</sub>	initial number X <sub>3</sub>	number surviving Y <sub>3</sub>	proportion surviving Y <sub>3</sub> /X <sub>3</sub>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
experiment 1								
1	3776	8	.0021	2680	358	.1331	3079	387
2	2456	0	0	2230	432	.1937	2806	402
3	2034	105	.0516	2105	308	.1463	1862	342
4	1747	156	.0893	1696	403	.2376	1668	349
5	1584	137	.0865	1411	196	.1389	1532	525
experiment 2								
1	779	72	.092	757	72	.095	1540	421
2	767	62	.081	703	62	.088	985	245
3	752	53	.060	651	62	.095	943	202
4	723	58	.070	641	80	.125	785	247
5	702	63	.090	615	85	.138	737	286
6	597	59	.099	542	80	.148	714	296
7	515	75	.146	530	62	.117	553	221
8	432	58	.134	460	80	.174	439	164
9	353	62	.176	460	70	.152	404	215
10	333	61	.183	403	72	.179	281	148

TABLE 4. CHI-SQUARE VALUES: TESTING WITHIN  
TREATMENT HOMOGENEITY

experiment	treatment	degrees of freedom	chi-square	
			observed	5% level
(1)	(2)	(3)	(4)	(5)
1	control	4	504.7	9.49
	antibiotic	4	108.5	9.49
	B complex with B <sub>12</sub>	4	322.8	9.49
2	control	9	74.7	16.90
	manure	9	54.4	16.90
	B complex with B <sub>12</sub>	9	315.8	16.90

# ON THE SURVIVAL RATES OF THE INDIAN CARP

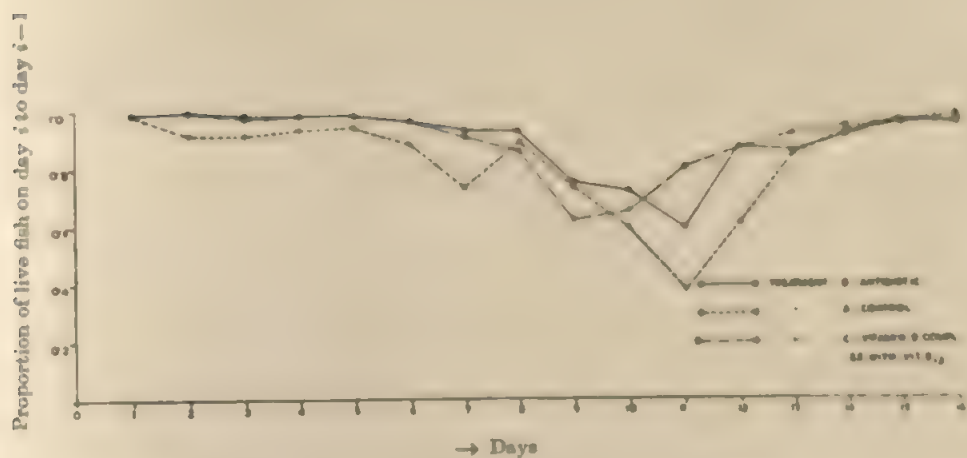


Figure 1. Daily Survival Rate of Spawn for Experiment 1.

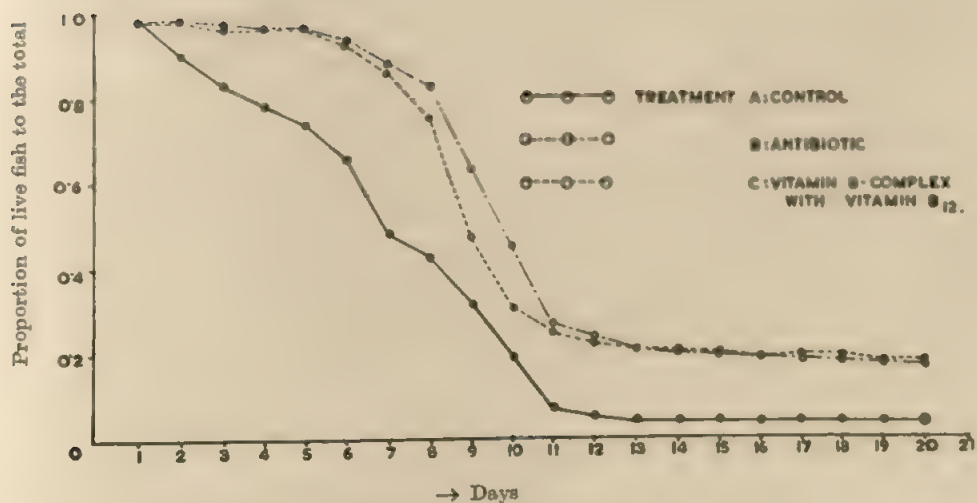


Figure 2. Cumulative Survival Rate of Spawn for Experiment 1.



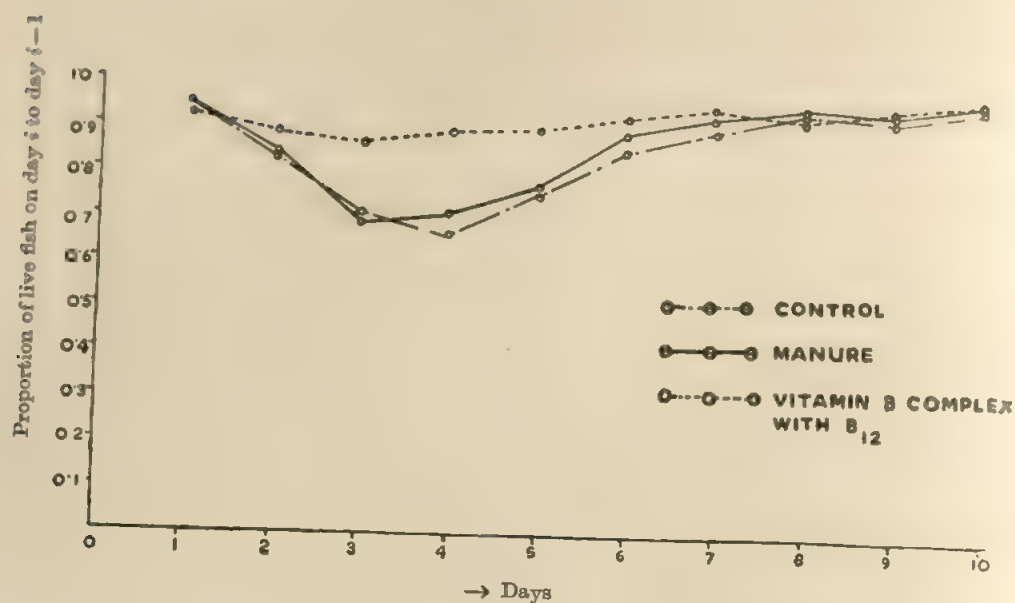


Figure 3. Daily Survival Rate of Spawn for Experiment 2

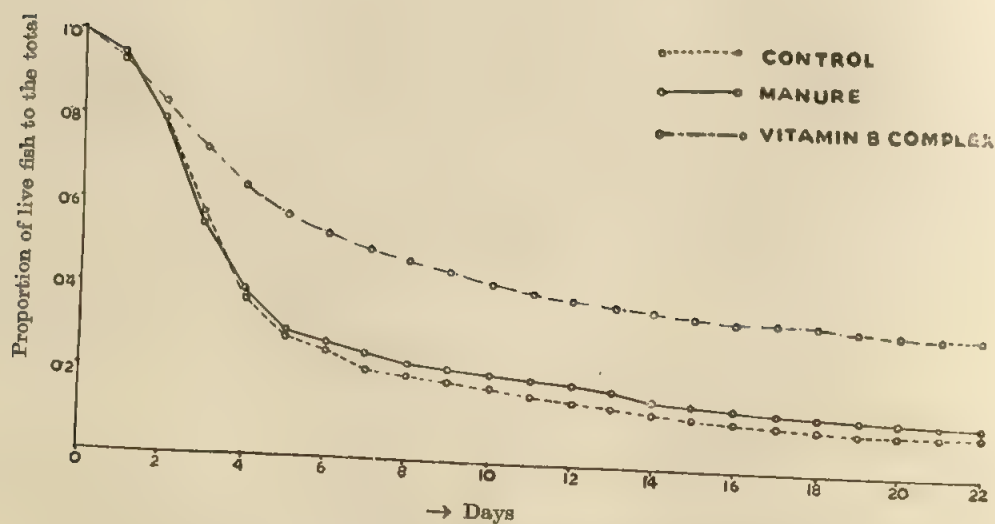


Figure 4. Cumulative Survival Rate of Spawn for Experiment 2

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TABLE 5.  $D_{m,n}$  VALUES FOR KOLMOGOROV-SMIRNOV TEST OF SIGNIFICANCE FOR TWO DISTRIBUTIONS

experiment	treatment	m	n	$D_{m,n}$	
				observed	5% level
(1)	(2)	(3)	(4)	(5)	(6)
1	control and antibiotic	5	5	1.0	.86,033
	control and vitamin B complex and B <sub>12</sub>	5	5	1.0	.86,033
	vitamin B complex and B <sub>12</sub> and antibiotic	5	5	0.1	.86,033
2	control and manure	10	10	0.3	.56,328
	control and vitamin B complex and B <sub>12</sub>	10	10	1.0	.56,328
	vitamin B complex and B <sub>12</sub> and manure	10	10	1.0	.56,328

TABLE 6. COEFFICIENT OF CONCORDANCE,  $S$ , FOR INITIAL NUMBER AND FINAL PROPORTION SURVIVING

experiment	treatment	$S$
		observed
(1)	(2)	(3)
1	control	-6
	antibiotic	-2
	vitamin B complex with B <sub>12</sub>	-10*
2	control	-31**
	manure	-37**
	vitamin B complex with B <sub>12</sub>	-33**

\* $P = .0083$ , \*\* $P = .0023$

TABLE 7. COEFFICIENT OF CONCORDANCE,  $S$ , FOR INITIAL NUMBER AND PROPORTION SURVIVING FOR SUCCESSIVE EXPERIMENTAL PERIODS

experiment	treatment	observed $S$ for period in days		
		(3)	(4)	(5)
(1)	(2)	(3)	(4)	(5)
1		1-5	6-12	13-21
	control	-6	-8*	-2
	antibiotic	-4	-8*	-4
	vitamin B complex with B <sub>12</sub>	-4	-8*	-2
2		1-7	8-14	15-22
	control	-27**	-29**	-7
	manure	-25**	-39**	-5
	vitamin B complex with B <sub>12</sub>	-29**	-11	-1

\* $P < .042$ , \*\* $P < .036$ .

TABLE 8. ANALYSIS OF VARIANCE SUMMARY TABLES TO TEST SIGNIFICANCE OF REGRESSION

source of variation	control				treatment				vitamin B complex with H <sub>12</sub>			
	d.f.	s.s.		f	m.s.	antibiotic		f	m.s.	s.s.	m.s.	f
		s.s.	m.s.			s.s.	m.s.					
experiment 1												
regression	1	14.0206	14.0206	14.103*	.4820	.48200	.099	42.4836	42.48360	10.254*		
residual	3	2.9824	.9941		14.6040	4.86800		12.4268	4.14293			
total	4	17.0030			15.0860			54.9124				
experiment 2												
regression	1	5.2126	5.21260	73.303**	4.1696	4.16960	30.357**	41.6037	41.6037	15.494**		
residual	3	.5689	.07111		1.0983	.13735		21.4814	2.6852			
total	9	5.7715			5.2684			63.0851				

\* $P < .05$ , \*\* $P < .01$ .

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TABLE 9. ESTIMATED VALUES OF  $a$  AND  $b$  FOR REGRESSION OF PROPORTION SURVIVING ON INITIAL NUMBER

experiment	treatment	$a$	$b$	$a^2$	$b^2$
(1)	(2)	(3)	(4)	(5)	(6)
1	control	-.07596	257.387	.000559	4666.25
	B complex with B <sub>12</sub>	-.03465	476.879	.017340	45559.43
2	control	-.00032	82.490	.000365	116.89
	manure	-.01064	78.630	.000235	82.16
	B complex with B <sub>12</sub>	.17941	112.060	.001639	803.79

TABLE 10. EXPERIMENT 1: PROPORTION SURVIVING IN RELATION TO INITIAL NUMBER FOR SUCCESSIVE PERIODS IN THE EXPERIMENT

treatment	initial no.	no. sur- viving on 5th day	survival rate in this period 1-5	no. sur- viving on 12th day	survival rate in this period (5-12)	no. sur- viving on 21st day	survival rate in this period 12-21
(1)	(2)	(3)	(4) (3)/(2)	(5)	(6) (5)/(3)	(7)	(8) (7)/(5)
control	2456	1401	.5704	0	0	0	—
	3776	2255	.5972	10	.0017	8	.8
	2034	1789	.8795	148	.0827	105	.7095
	1584	1510	.9533	208	.1516	187	.6587
	1747	1632	.9342	160	.0980	156	.9750
	2689	2570	.9215	410	.1595	358	.8732
antibiotic	2230	2168	.9722	572	.2638	432	.7552
	2105	2030	.9644	370	.1823	308	.8324
	1696	1646	.9705	604	.3670	403	.6672
	1411	1371	.9717	427	.3115	196	.4590
	1862	1787	.9597	383	.2143	342	.8930
vitamin B complex	3079	2922	.9490	480	.1966	387	.8063
	2806	2716	.9679	492	.1811	402	.8171
	1668	1591	.9538	444	.3371	349	.7860
	1532	1488	.9713	664	.4462	525	.7907



TABLE 11. EXPERIMENT 2. PROPORTION SURVIVING IN RELATION TO INITIAL NUMBER FOR SUCCESSIVE PERIODS IN THE EXPERIMENT

treatment	initial no.	no. sur- viving on 7th day	survival rate dur- ing first week	no. sur- viving on 14th day	survival rate dur- ing second week	no. sur- viving on 22nd day	survival rate dur- ing last week
(1)	(2)	(3)	(4)=(3)/(2)	(5)	(6)=(5)/(3)	(7)	(8)=(7)/(5)
control	752	156	.2074	74	.4744	53	.7162
	702	121	.1724	74	.6116	63	.8513
	432	99	.2292	68	.6869	58	.8529
	515	126	.2447	88	.6984	75	.8523
	597	136	.2278	78	.5735	59	.7564
	353	130	.3683	80	.6154	62	.7750
	779	137	.1759	87	.6350	72	.8276
	723	126	.1743	73	.5794	58	.7945
	333	96	.2883	80	.8333	61	.7625
	767	143	.1864	70	.4895	62	.8857
manure	757	170	.2246	81	.4765	72	.8889
	460	112	.2435	92	.8214	70	.7609
	641	153	.2465	102	.6456	80	.7843
	651	145	.2227	79	.5448	62	.7849
	460	138	.3000	111	.8043	80	.7207
	530	167	.3151	86	.5150	62	.7209
	703	140	.1991	82	.5857	62	.7561
	615	137	.2228	100	.7299	85	.8500
	403	108	.2680	91	.8426	72	.7912
	542	139	.2565	99	.7122	80	.8081
vitamin B complex	985	437	.4436	274	.6270	245	.8942
	1540	576	.3740	446	.7743	421	.9439
	553	341	.6166	262	.7683	221	.8435
	281	201	.7153	175	.8706	148	.8457
	714	375	.5252	330	.8801	296	.8970
	439	257	.5854	175	.6809	164	.9371
	737	407	.5522	310	.7617	286	.9226
	404	267	.6609	227	.8502	215	.9471
	943	349	.3701	224	.4183	202	.9018
	785	501	.6382	303	.6048	247	.8152

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# SURVIVAL RATES OF INDIAN CARP (*CATLA CATLA*, *LABEO ROHITA*, *CIRRHINA MRIGALA*.) FROM FIRST TO FOURTH WEEK OF LIFE UNDER EXPERIMENTAL TREATMENTS ISOLATING VITAMIN B<sub>12</sub> FROM VITAMIN B COMPLEX

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**SUMMARY.** A factorial design was adopted to investigate the effects of two factors, vitamin B<sub>12</sub>, and vitamin B complex within B<sub>12</sub>, at four different levels on the survival rate of Indian carp (*Catla catla*, *Labeo rohita*, *Cirrhina mrigala*). The entire design was replicated thrice using three randomized blocks. Analysis of variance on the final proportion surviving showed that main effects of vitamin B<sub>12</sub> were highly significant, while main effects of vitamin B complex without B<sub>12</sub> and interaction effects were not significant. Product-moment correlations between initial number and proportion surviving were significant for the first two weeks of life in the control group, for the first week in the lowest level of B<sub>12</sub>, and were not significant for higher levels of B<sub>12</sub>. Juvenile life tables were computed for Indian carp under untreated control conditions and for three levels of vitamin B<sub>12</sub> treatment.

## 1. INTRODUCTION

Previous experiments in this laboratory on the survival rates of Indian carp (*Catla catla*, *Labeo rohita*, *Cirrhina mrigala*) during the initial period of life demonstrated that treatment with vitamin B complex enhanced survival significantly (Das and Krishnamurthy, 1960). The B complex mixture consisted of 5  $\mu$ g crystalline vitamin B<sub>12</sub>, 3 mg aneurine hydrochloride, 30 mg nicotinamide, 1 mg riboflavin, 1 mg calcium pantothenate, and 0.5 mg pyridoxine hydrochloride. Effectiveness of the experimental treatment was limited to the period when the death rate was high. That period occurred during the first week, and the first part of the second week, of the life of the fry, during which the rate of growth is also comparatively high. In order to ascertain in more detail what component or components of the B complex were responsible for the experimental result, the present research was undertaken.

The role of vitamin B complex in the survival of fish during the post-embryonic period, particularly the first four weeks of life, has received little direct research attention. For the Indian carp, its role has not been investigated in terms of survival at any period. An indirect approach to this problem is through the determination of nutritional requirements, for which artificial diets composed of chemically pure substances are necessary. Such diets should be able to maintain the fish over long periods of time. In the case of trout, a diet meeting these specifications was developed by Wolf (1951), and it has permitted subsequent determination of vitamin requirements in trout. All of the fat soluble vitamins are assumed to be necessary for trout;

however, neither vitamin A nor vitamin D have been shown to be required conclusively. Ten of the water soluble vitamins have been established as necessary for trout : aneurine hydrochloride, riboflavin, pyridoxine, B<sub>12</sub>, biotin, choline, folic acid, inositol, niacin, and pantothenic acid. Tentative daily requirements have been established (per kilogram trout weight per day) for aneurine hydrochloride (.150—.186 mg), riboflavin (.44—.68 mg), pyridoxine (.225—.250 mg), biotin (.0433—.0796), folic acid (.00292 mg), niacin (3.0—4.1 mg) and pantothenic acid (.97—1.25 mg). (Phillips and Brockway, 1957).

A direct approach to the problem has been reported by Phillips and Brockway (1957), who attributed high mortalities in trout to deficiencies of aneurine hydrochloride and pyridoxine, and reduction in growth rate to deficiencies of riboflavin and B<sub>12</sub>.

The present research project was designed to investigate further the role of the B complex in the survival of Indian carp in the post embryonic period. Two considerations were investigated : first, whether B<sub>12</sub> or some other constituent or constituents of the B complex, was the active component enhancing survival, and second, treating B<sub>12</sub> as one factor and the rest of the B complex as another factor, which of several dosage levels, taking the two factors singly and in combination, would be most effective in increasing survival.

## 2. EXPERIMENTAL DESIGN

In order to compare vitamin B<sub>12</sub> with other components of vitamin B complex, and to investigate which of several dosage levels would have the optimal effect in increasing survival, a factorial design (4<sup>2</sup>) was adopted. All possible combinations of the two factors, vitamin B<sub>12</sub> and vitamin B complex without B<sub>12</sub>, at four different levels, were studied. The entire design was replicated thrice, using three randomized blocks. Within each block there were sixteen experimental units, and there were a total of 48 experimental units in the entire experiment. For each combination of the two factors, there were three experimental units, one in each block.

The four levels were defined as follows for the two variables :

level symbol	dosage of vitamin	dosage of vitamin B complex without B <sub>12</sub>
0	0 $\mu$ g	0 tablets
1	8 $\frac{1}{2}$ $\mu$ g	$\frac{1}{2}$ tablet
2	16 $\frac{3}{4}$ $\mu$ g	1 tablet
3	25 $\mu$ g	1 $\frac{1}{2}$ tablets

Varying the two variables at four levels in all possible ways, sixteen treatments were defined. The treatments are represented by two digits : the tens digit indicates



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level of B complex without B<sub>12</sub>; the units digit indicates level of B<sub>12</sub>. The sixteen treatments and their symbols may be summarized as follows:

symbol	dosage of	
	B complex without B <sub>12</sub>	B <sub>12</sub>
00	0 tablets	0 $\mu$ g
01	0 tablets	8 $\frac{1}{2}$ $\mu$ g
02	0 tablets	16 $\frac{1}{2}$ $\mu$ g
03	0 tablets	25 $\mu$ g
10	$\frac{1}{2}$ tablet	0 $\mu$ g
11	$\frac{1}{2}$ tablet	8 $\frac{1}{2}$ $\mu$ g
12	$\frac{1}{2}$ tablet	16 $\frac{1}{2}$ $\mu$ g
13	$\frac{1}{2}$ tablet	25 $\mu$ g
20	1 tablet	0 $\mu$ g
21	1 tablet	8 $\frac{1}{2}$ $\mu$ g
22	1 tablet	16 $\frac{1}{2}$ $\mu$ g
23	1 tablet	25 $\mu$ g
30	1 $\frac{1}{2}$ tablets	0 $\mu$ g
31	1 $\frac{1}{2}$ tablets	8 $\frac{1}{2}$ $\mu$ g
32	1 $\frac{1}{2}$ tablets	16 $\frac{1}{2}$ $\mu$ g
33	1 $\frac{1}{2}$ tablets	25 $\mu$ g

Counts were taken for 18 days. Fluorescent tube lights were arranged to ensure equal lighting throughout the laboratory. Fans were arranged for constant circulation of air and to maintain constant temperature in the laboratory.

### 3. MATERIALS AND METHODS

One day old Indian carp (*Catla catla*, *Labeo rohita*, *Cirrhina mrigala*) were procured from the same source. In order to assign an equal number of carp to each experimental unit, a sampling procedure of allocation was adopted, as their exact enumeration was not feasible at the initial period due to their minute size. An equal amount of pond water, containing one teaspoon of carp, was assigned randomly to each experimental unit containing 9 litres of water. All experimental units were the same, consisting of an earthen bowl or *gamla*, of 16 inches diameter, filled with pond water from the same source. Throughout the experimental period the water was changed every 24 hours to prevent accumulation of waste products. It has been reported (Kawamoto, 1957) that removal of excretory substances in the water is more important than such factors as oxygen or carbon dioxide for carp culture. Water temperature and pH were recorded daily. Water temperature ranged from 26.5 to 28°C, and pH from 7.3 to 7.6.

Experimental counts were made as follows. Throughout the experimental period, every day, at the same time the dead carp were completely enumerated. At the end of the experiment, the remaining live carp were completely enumerated. The total carp dead and alive reconstructed the initial number. The dead carp were enumerated in the following manner : a water current was induced in the *gamla* by an artificial centrifugal force, and the dead carp were withdrawn with a glass pipette. For each experimental unit, a separate pipette was assigned. The carp were placed on blotting paper and counted.

The carp were fed live *Daphnia*, given 10cc by volume each day to each experimental unit. The *Daphnia* were collected from the same source throughout



the experimental period. To determine whether this ration was sufficient, a check was made each day to see if any live *Daphnia* remained. It was found that there were always some *Daphnia* remaining.

The B complex factor used tablets of the following composition: 1mg aneurine hydrochloride, 1mg riboflavin, 10mg nicotinamide, 130mg yeast.

At treatment level 0, no tablet was given; at level 1,  $\frac{1}{2}$  tablet was given per experimental unit each day; at level 2, 1 tablet was given per experimental unit each day; and at level 3,  $1\frac{1}{2}$  tablets were given per experimental unit each day.

A solution of crystalline vitamin  $B_{12}$  was prepared so as to obtain  $1\frac{2}{3} \mu g$   $B_{12}$  per cc. The treatments were given volumetrically as follows: at treatment level 0, no vitamin  $B_{12}$  was given; at level 1, 5cc containing  $8\frac{1}{3} \mu g$   $B_{12}$  were given to each experimental unit each day; at level 2, 10cc containing  $16\frac{2}{3} \mu g$   $B_{12}$  were given to each experimental unit each day and at level 3, 15cc containing  $25 \mu g$   $B_{12}$  were given to each experimental unit each day. Each experimental unit contained 9 litres of water.

The combinations of treatments at the various levels have been described in the previous section on Experimental Design.

#### 4. RESULTS

Tabular summaries of the data and statistical tests of significance are presented in Tables 1 to 7, accompanied by Figures 1 and 2. Table 1 gives, for each of the 16 treatments, the number alive on each day, pooled over three replications, and the corresponding cumulative survival rate. The survival rate was obtained by dividing the pooled number alive on any one day by the pooled initial number. Table 2 gives the final proportion surviving for increasing levels of  $B_{12}$  and B complex summed over three replications. The analysis of variance summary table for the factorial design is given in Table 3. Table 4 gives the initial number and final proportion surviving for all 48 replications. To examine the proportion surviving in relation to initial number for successive periods throughout the experiment, the proportions surviving were computed for the initial, middle, and final periods of the experiment with initial number of the particular period as the base. The data and proportions are presented in Tables 5a, 5b and 5c for the three periods respectively. Product moment correlations were computed for the data of Tables 4, 5a, 5b and 5c, between initial number and final proportion surviving. Each correlation is based on the data for 12 experimental units receiving the same  $B_{12}$  treatment (B complex treatments were ignored). The correlation coefficients are given in Table 6. A juvenile life table for carp, for the first 18 days of post-embryonic life, is presented for the different levels of  $B_{12}$  treatment (ignoring B complex) in Table 7. Figure 1 presents the forces of mortality, or cumulative survival curves, as given by Table 7. Figure 2 compares the cumulative survival curves of the 0,0 (control) and the 1,3 (level 1 B complex, level 3  $B_{12}$ ) treatments.

#### 5. DISCUSSION

The present experiment was undertaken to investigate whether the effect of B complex on survival rate, reported previously, was due to vitamin  $B_{12}$  or to some

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other component or components of the B complex. Two factors were therefore used: vitamin B<sub>12</sub> alone, and vitamin B complex without B<sub>12</sub>. In addition, the experiment was designed to investigate which of several dosage levels, singly and in combination, of the two factors would be most effective in increasing survival. Four dosage levels were adopted for this purpose, and all possible combinations of the two factors at the four levels were examined.

To examine the significance of the different treatments, an analysis of variance for the factorial design was applied to the final proportion surviving. Several questions may be asked of the analysis of variance summary table. First, did vitamin B<sub>12</sub> increase survival? Table 3 shows that the main effect of B<sub>12</sub> was highly significant. According to the critical difference between two levels of a factor, 1.2763, levels 1, 2, and 3 of B<sub>12</sub> are found to be significantly higher than level 0, but not to differ significantly among themselves (see Table 2). The cumulative survival curves for the 4 levels of B<sub>12</sub>, given in Table 7, illustrate these differences. Second, did B complex without B<sub>12</sub> increase survival? Table 3 shows that, in this experiment, the main effect of B complex was not significant.

While interaction, as a source of variation, was not shown to be significant, it should be noted that in the most effective treatment, 1.3, 73 percent of the carp survived as compared to 12 percent in the control (see Table 1 and Figure 2). It may be added here that although it was expected that *Labeo rohita*, *Catla catla*, and *Cirrhina mrigala* would be equally represented in the experiment it was found that the greatest proportion were *Labeo rohita*. As *Labeo rohita*, *Catla catla* and *Cirrhina mrigala* are different species, it would not be unexpected if their survival were affected differently by vitamin treatments. Further experiments will be undertaken along these lines varying the species composition of the carp studied.

In previous experiments on the survival rate of Indian carp (Das and Krishnamurthy, 1960), it was found by statistical analysis that survival rate was inversely related to the initial number; however, this relationship was shown in the first two weeks but not in third week of life. To examine whether this effect was operating in the present data, the first step was to correlate initial number and final proportion surviving for the experimental period as a whole. The coefficients for the different levels of B<sub>12</sub> are given in Table 6 and show that final proportion surviving was negatively correlated ( $P < .01$ ) with initial number for the 0 and 1 levels of B<sub>12</sub>, but was independent for the 2nd and 3rd levels of B<sub>12</sub>. The supporting data are given in Table 4. To determine whether this relationship was consistent throughout the experiment, or limited to a particular period, the second step was to divide the experimental period up into three periods of six days each. The data for these three periods are presented in Tables 5a, 5b and 5c, and the corresponding correlation coefficients are presented in Table 6. The relationship between initial number and final proportion surviving occurs for levels 0 and 1 of B<sub>12</sub> during the first six days; it holds only for the 0 level during the second six days; and is not found for any of the levels during the last six days. It may be suggested that both B<sub>12</sub> and age play a role in these results. After a certain age, initial number apparently did not influence final proportion



surviving. Within the period in which initial number may have an effect,  $B_{12}$  may have modified the effect in proportion to the concentration or level employed. The age effect is in agreement with the results of earlier research (Das and Krishnamurthy, 1960), while the  $B_{12}$  effect is not unexpected if  $B_{12}$  is the active factor in the results reported with B complex, including  $B_{12}$ , in the earlier experiment. Before conclusions may be drawn, however, it should be noted that if the range of initial number were extended beyond that of the present experiments, different results might be obtained.

Results of the present experiment suggest that for commercial cultivation of Indian carp during the post-embryonic period, vitamin treatment may be of economic value. Figure 2 shows the cumulative survival rate of the most effective treatment, (level 1 of B complex and level 3 of  $B_{12}$ ) and of the control, 0, 0. Whereas the final percent surviving is 73 percent for the former, it is 12 percent for the latter. It can also be seen from Figure 2 that this saving is due largely to a sharp reduction in mortality during the early period of the experiment. A short term treatment during this period, resulting in a saving of 61 percent over the untreated condition, may be economically feasible, especially if cheaper sources of vitamin  $B_{12}$  can be found. Research on such possible cheaper sources is already in progress in this laboratory and will be reported later.

A final note may be made of the patterns of cumulative survival, or forces of mortality, observed in this experiment. The cumulative survival rates for the different levels of  $B_{12}$  are given in Table 7 and are presented graphically in Figure 1. The pattern of survival is in agreement with that reported earlier (Das and Krishnamurthy, 1960). As in the earlier research, it was also found that the experimental treatments enhanced survival during the early period of post-embryonic life, and that, without treatment, mortality was highest during this period.

## 6. CONCLUSIONS

1. Indian carp (*Catla catla*, *Labeo rohita*, *Cirrhina mrigala*) were treated with vitamin  $B_{12}$  and vitamin B complex, without  $B_{12}$ , from the first to fourth week of post-embryonic life. The results showed that, at the experimental dosage levels investigated,  $B_{12}$  significantly enhanced survival, while B complex without  $B_{12}$  did not have a significant effect.

2. Final proportion surviving was independent of initial number for levels 2 and 3 of  $B_{12}$ . It was not independent for 0 level during the first 12 days of the experiment, nor for level 1 during the first 6 days of the experiment. During the last 6 days, no relation between initial number and proportion surviving was observed for any of the treatments, including the untreated control.

3. The most effective treatment in this experiment, 1, 3, combined  $B_{12}$  with B complex and resulted in 73 percent survival, as compared with 12 percent survival in the untreated control. This saving was observed to occur during a very short period marked by high mortality in the untreated control condition. It is suggested that vitamin treatment during this period may have economic implications for commercial cultivators of Indian carp.

# ON SURVIVAL RATES OF THE INDIAN CARP

TABLE 1. NUMBER OF CARP ALIVE AND SURVIVAL RATE FOR ALL EXPERIMENTAL TREATMENTS BY DAYS

day	treatment													
	(00)		(01)		(02)		(03)		(10)		(11)		(12)	
	alive	rate	alive	rate	alive	rate	alive	rate	alive	rate	alive	rate	alive	rate
0	220	1.000	436	1.000	755	1.000	546	1.000	466	1.000	405	1.000	726	1.000
1	193	.877	414	.949	723	.958	542	.993	445	.961	380	.938	706	.972
2	167	.759	399	.915	696	.922	510	.934	412	.884	301	.891	669	.921
3	151	.686	354	.812	625	.828	465	.852	317	.680	313	.773	675	.792
4	126	.573	282	.647	525	.696	382	.700	163	.350	247	.610	451	.621
5	87	.395	240	.550	481	.637	331	.606	61	.131	216	.533	411	.566
6	68	.309	221	.508	449	.608	318	.583	54	.116	204	.504	401	.552
7	54	.254	202	.463	436	.578	312	.572	44	.094	192	.474	390	.537
8	43	.195	189	.433	422	.559	309	.566	38	.082	184	.454	384	.520
9	37	.168	178	.408	408	.541	290	.531	34	.073	181	.447	357	.492
10	33	.150	174	.399	405	.537	289	.529	31	.067	176	.431	356	.490
11	31	.141	170	.390	403	.534	288	.527	30	.064	171	.422	355	.489
12	29	.132	170	.390	402	.533	287	.526	29	.062	167	.412	354	.487
13	29	.132	170	.390	400	.530	287	.526	29	.062	165	.407	352	.485
14	28	.127	168	.385	398	.527	284	.520	28	.060	163	.402	352	.485
15	28	.127	166	.381	398	.527	284	.520	28	.060	157	.388	352	.485
16	28	.127	166	.381	396	.525	282	.517	28	.060	155	.383	346	.476
17	28	.127	164	.376	396	.525	281	.515	28	.060	154	.380	345	.475
18	27	.123	164	.376	396	.525	279	.511	26	.056	154	.380	345	.475

day	treatment													
	(20)		(21)		(22)		(23)		(30)		(31)		(32)	
	alive	rate	alive	rate	alive	rate	alive	rate	alive	rate	alive	rate	alive	rate
0	298	1.000	342	1.000	494	1.000	630	1.000	353	1.000	419	1.000	686	1.000
1	272	.913	339	.911	477	.965	587	.932	341	.966	397	.947	639	.931
2	255	.856	323	.944	456	.923	551	.875	309	.875	379	.905	597	.870
3	217	.728	292	.854	406	.822	440	.698	254	.720	355	.800	502	.732
4	135	.453	239	.699	355	.719	352	.559	165	.467	275	.656	396	.577
5	85	.285	213	.623	333	.674	331	.525	143	.405	249	.594	364	.531
6	70	.235	199	.582	321	.650	307	.487	111	.315	225	.537	341	.497
7	58	.195	194	.567	319	.646	290	.460	98	.278	220	.525	339	.494
8	51	.171	186	.544	312	.631	286	.454	89	.252	209	.499	322	.469
9	45	.151	183	.535	305	.617	281	.446	76	.215	195	.465	303	.442
10	44	.148	174	.509	300	.670	281	.446	55	.156	185	.442	298	.434
11	42	.141	172	.503	297	.601	280	.444	52	.150	174	.415	296	.431
12	42	.141	169	.494	296	.599	280	.444	49	.139	172	.410	294	.429
13	42	.141	169	.494	296	.599	280	.444	45	.125	171	.408	292	.426
14	39	.131	168	.491	292	.591	278	.441	41	.116	168	.401	299	.424
15	38	.128	168	.491	290	.587	277	.440	35	.099	168	.401	289	.421
16	36	.121	168	.491	289	.585	277	.440	33	.093	166	.396	289	.421
17	36	.121	168	.491	289	.585	276	.438	33	.093	165	.394	289	.421
18	36	.121	168	.491	289	.585	276	.435	33	.093	163	.389	286	.417



TABLE 2. SUM OF FINAL PROPORTION SURVIVING OVER THREE REPLICATIONS\*

		level of B <sub>12</sub>				
		0	1	2	3	row totals
level of B complex	0	.3625	1.2050	1.5838	1.4524	4.6037
	1	.2780	1.2082	1.4360	2.1329	5.0551
	2	.4823	1.6729	1.7342	1.2643	5.1537
	3	.3662	1.4559	1.2884	1.4953	4.6058
column totals		1.4890	5.5420	6.0424	6.3449	19.4183

\* Critical difference for comparing two levels of a factor = 1.2763

Critical difference for comparing two treatments = .6381

TABLE 3. ANALYSIS OF VARIANCE SUMMARY TABLE TESTING MAIN EFFECTS, INTERACTION, AND TREATMENT AND BLOCK DIFFERENCES

source	d.f.	s. s.	m. s.	F	tabulated F at 5% level	tabulated F at 1% level
main effect of B-complex	3	.02121	.00707	.4441	2.92	4.51
main effect of B	3	1.28600	.42866	26.9259	2.92	4.51
interaction	9	.21601	.02400	1.5075	2.21	3.06
treatment	15	1.52319	.10155	6.3788	2.04	2.74
block	2	.14558	.07280	4.5729	3.32	5.39
error	30	.47774	.01592			
total	47	2.14651				

TABLE 4. FINAL PROPORTION SURVIVING IN RELATION TO INITIAL NUMBER

treatment*	block 1		block 2		block 3	
	initial number	proportion surviving	initial number	proportion surviving	initial number	proportion surviving
00	48	.1250	104	.1346	68	.1029
10	174	.0690	52	.1923	240	.0167
20	137	.1168	26	.2692	135	.0963
30	221	.0568	61	.1967	71	.1127
01	179	.3073	101	.5644	156	.3333
11	169	.2367	183	.4809	53	.4906
21	177	.3729	60	.7667	105	.5333
31	235	.3617	51	.8235	133	.2707
02	231	.5281	168	.5417	306	.5140
12	253	.3676	239	.4017	234	.6667
22	147	.4558	171	.6023	176	.6761
32	377	.3793	144	.3333	165	.5758
03	177	.5281	114	.3596	255	.5647
13	146	.7329	85	.6000	150	.8000
23	142	.3234	306	.4739	182	.4670
33	215	.2884	89	.5506	96	.6563

\* Tens digit indicates level of B Complex.

Units digit indicates level of B<sub>12</sub>.

# ON SURVIVAL RATES OF THE INDIAN CARP

TABLE 5A. PROPORTION SURVIVING IN RELATION TO INITIAL NUMBER.  
FIRST SIX DAYS

level of B <sub>12</sub>	initial number	proportion surviving on 6th day	level of B <sub>12</sub>	initial number	proportion surviving on 6th day
0	26	.5000	2	144	.3681
	48	.2083		147	.5034
	52	.4038		165	.6343
	61	.5738		168	.5536
	68	.5147		171	.6667
	71	.6197		176	.7857
	104	.2212		231	.5758
	135	.2000		234	.7000
	137	.2190		239	.8807
	174	.1322		253	.4071
	221	.1448		256	.5983
	240	.0417		277	.4774
1	51	.9216	3	85	.6588
	53	.6038		89	.5843
	60	.9333		96	.7188
	101	.6436		114	.4211
	105	.5905		142	.3944
	153	.3910		146	.7534
	156	.5192		150	.8733
	169	.3887		177	.6667
	177	.4576		182	.5220
	179	.4286		215	.3116
	183	.5902		255	.5901
	235	.5362		266	.5098

TABLE 5B. PROPORTION SURVIVING IN RELATION TO INITIAL NUMBER.  
SECOND SIX DAYS

level of B <sub>12</sub>	initial number	proportion surviving on 12th day	level of B <sub>12</sub>	initial number	proportion surviving on 12th day
0	10	.7000	2	53	.9245
	10	.6000		74	.9054
	13	.8462		93	.9892
	21	.4762		103	.9223
	23	.6087		108	.8796
	23	.5652		114	.9035
	27	.4815		133	.9248
	30	.6000		135	.9474
	32	.5000		134	.7239
	35	.2286		164	.9878
	35	.5143		180	.8333
	44	.3409		213	.8310
1	32	.8438	3	48	.8058
	47	.9149		52	.9808
	52	.7500		56	.9286
	56	.8214		56	.8671
	62	.9032		64	.9254
	64	.7156		69	.9275
	65	.8769		95	.8947
	75	.7600		110	1.0000
	81	.6914		118	.8220
	81	.8271		131	.9237
	108	.8426		152	.9671
	126	.7143		156	.9423

TABLE 5C. PROPORTION SURVIVING IN RELATION TO INITIAL NUMBER: THIRD SIX DAYS

level of $B_{12}$	number surviving on the 12th day	final proportion surviving	level of $B_{12}$	number surviving on the 12th day	final proportion surviving
0	0	.6667	2	49	.9706
	7	.8571		67	1.0000
	7	.6364		92	.9891
	8	.8750		95	.9789
	10	1.0000		95	1.0000
	13	.9231		97	.9897
	13	1.0000		103	1.0000
	14	1.0000		123	.9919
	15	.5333		126	.9444
	16	.8889		150	.9533
	16	.8125		162	.9630
	18	.6667		172	.9774
	27	.9630		43	.9535
	39	.9231		48	.9583
	43	.9767		51	.9608
	46	1.0000		52	.9808
1	49	.8163	3	62	1.0000
	56	.9286		64	.9844
	56	1.0000		85	1.0000
	57	1.0000		97	.9691
	57	.9649		110	.9727
	67	.9851		121	.9917
	90	.9444		147	.9796
	91	.9670		147	.9864

TABLE 6. PRODUCT MOMENT CORRELATIONS BETWEEN INITIAL NUMBER AND FINAL PROPORTION SURVIVING FOR SUCCESSIVE SIX DAY PERIODS

(12 experimental units in each cell)

period	level of $B_{12}$			
	0	1	2	3
(1)	(2)	(3)	(4)	(5)
first six days	-.7779**	-.6944**	-.1088	-.2724
second six days	-.7570**	-.3971	-.3389	.1569
third six days	.0251	.0928	-.5304	-.3788
total period	-.8351**	-.7399**	-.2463	-.2386

\*\*  $P < .01$

# ON SURVIVAL RATES OF THE INDIAN CARP

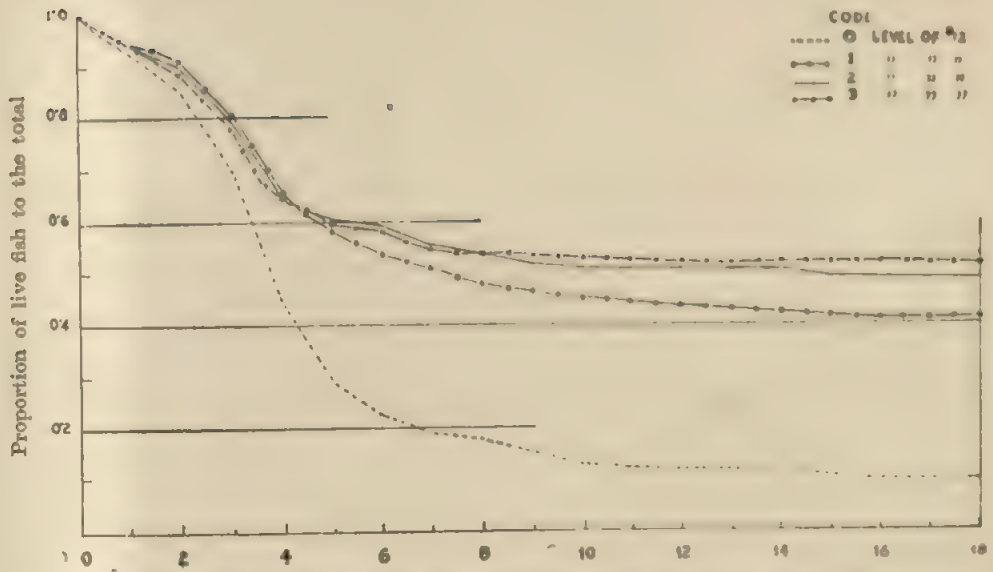


Figure 1. Cumulative survival rate of carp for different levels of vitamin  $B_{12}$  treatment.

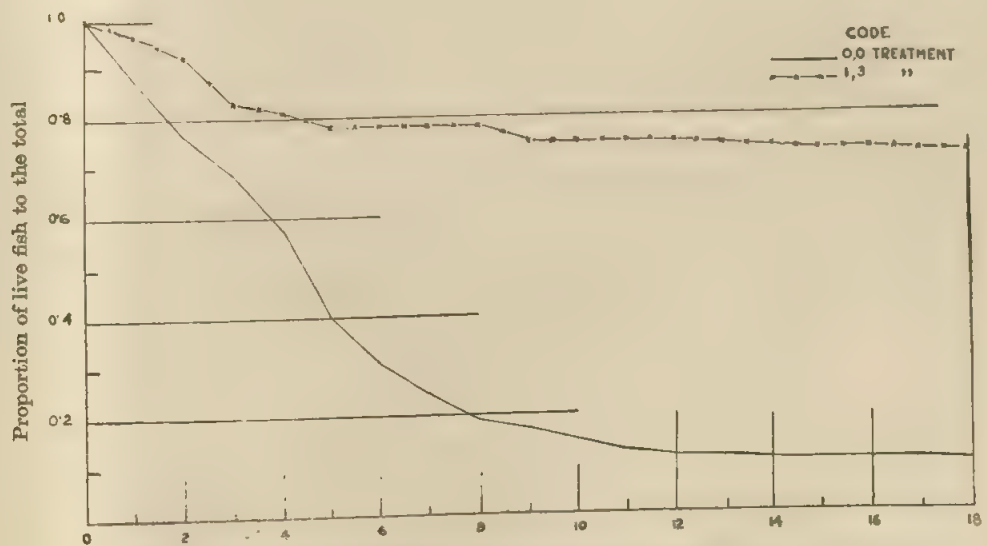


Figure 2. Cumulative survival rate of carp under no treatment control (0,0) condition versus treatment with vitamin  $B_{12}$  and B complex (1,3)



TABLE 7. JUVENILE LIFE TABLE FOR INDIAN CARP (*CATLA CATLA*, *LABEO ROHITA*, *CIRRHINA MRIGALA*) FOR DIFFERENT LEVELS OF VITAMIN B<sub>12</sub> TREATMENT

level of B <sub>12</sub>	0		1		2		3	
day	alive	rate	alive	rate	alive	rate	alive	rate
0	1337	1.0000	1603	1.0000	2662	1.0000	1957	1.0000
1	1251	.9357	1530	.9551	2545	.9564	1872	.9566
2	1143	.8549	1462	.9126	2418	.9087	1750	.8942
3	939	.7023	1294	.8077	2108	.7921	1496	.7644
4	589	.4409	1043	.6511	1727	.6490	1259	.6433
5	376	.2812	918	.5730	1589	.5971	1152	.5887
6	303	.2266	849	.5300	1512	.5682	1110	.5672
7	254	.1900	808	.5044	1476	.5547	1080	.5519
8	221	.1653	768	.4794	1440	.5412	1070	.5468
9	192	.1436	737	.4600	1373	.5160	1040	.5314
10	163	.1219	709	.4426	1359	.5107	1035	.5289
11	155	.1159	687	.4288	1354	.5088	1033	.5279
12	149	.1114	678	.4232	1346	.5058	1026	.5243
13	145	.1085	675	.4213	1340	.5038	1025	.5238
14	136	.1017	667	.4164	1333	.5009	1019	.5207
15	129	.0965	659	.4114	1320	.4994	1018	.5202
16	125	.0935	655	.4088	1320	.4961	1016	.5192
17	125	.0935	651	.4064	1319	.4951	1011	.5166
18	122	.0912	649	.4051	1316	.4946	1007	.5146

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# A NOTE ON THE AMOUNT OF REJECTION IN LAHIRI'S METHOD OF PPS SAMPLING

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**SUMMARY** Statistical estimate of the amount of rejection in Lahiri's method of PPS sampling is given. Punch card procedures for sample selection are also given in an outline.

**Problem :** In choosing random samples with probability proportional to size from a given population, running cumulatives of sizes are to be computed when the classical method is used. Lahiri (1951) has suggested a method which avoids calculation of cumulatives altogether and is now extensively used in National Sample Survey and other applied work. Some difficulty is experienced while using Lahiri's method in punched card system which suggests that a prior idea on the amount of rejection is absolutely necessary for avoiding much duplication of work. An idea on the amount of rejection in Lahiri's method is being presented in the following lines using some standard statistical formulae.

Let  $N$  = number of units in the population,  $X_r$  = size of the  $r$ -th unit,  $X =$  size of the largest unit,  $(y, z)$  = a pair of random numbers where  $1 \leq y \leq N$  and  $0 < z \leq X$ ,  $p$  = probability that a  $(y, z)$  will select a sample unit,  $q = 1 - p$ ,  $P$  = level of confidence,  $n$  = total number of units to be selected in the sample,  $m$  = number of  $(y, z)$  co-ordinates required for given  $p$  and  $n$ . Our problem is to determine the value of  $m$  at  $P$  level of confidence.

Lahiri's method for selecting a sample of  $n$  units from  $N$  with probability proportional to their size ( $X_r$ ) with replacement consists in drawing a  $(y, z)$  independently for every unit to be selected and accepting the  $y$ -th unit in the sample if  $z \leq X_y$ . This operation is repeated till  $n$  units accepted in sample.

Hence 
$$p = \frac{\sum_{r=1}^N X_r}{N \cdot X}$$

But whenever  $\sum_{r=1}^N X_r$  is not known, then an estimate of  $p$  can be obtained by taking  $\lambda$  (say) random samples from  $N$  individuals with replacement

i.e. 
$$\hat{p} = \frac{\sum_{i=1}^{\lambda} X_i}{\lambda \cdot X}$$

Now for given  $p$  and  $n$ ,  $m$  can be determined by using the exact binomial distribution formula, i.e., from the condition  $\sum_{r=0}^m {}^m C_r p^r q^{m-r} = P$ .

But when  $m$  is large (which will be evident from  $p$  and  $n$ ) the normal approximation formula is to be used, i.e.,  $m$  is to be computed from

$$[n/m - p] = -t\sqrt{p(1-p)/m} \quad \dots (1)$$

where 
$$1/\sqrt{2\pi} \int_{-t}^{\infty} e^{-x^2/2} \cdot dx = P.$$

From (1) we get  $m = n/p + t^2 \cdot q/2p + t\sqrt{(4n + t^2 q) \cdot q/2p}$

In the following Table the values of  $m$  for some combinations of  $p$ ,  $n$  and  $P$  are given. The table may be enlarged for further combinations of  $p$ ,  $n$  and  $P$  from the above formulae.

VALUES OF  $\alpha$  FOR DIFFERENT COMBINATIONS OF  $n$ ,  $p$  &  $P$  (The normal approximate formula is used whenever  $m > 150$ )

$P = .997$										$P = .950$									
$n/p$	.1	.2	.3	.4	.5	.6	.7	.8	.9	$n/p$	.1	.2	.3	.4	.5	.6	.7	.8	.9
1	98	97	97	97	97	97	97	97	97	1	99	99	99	99	99	99	99	99	99
2	97	97	97	97	97	97	97	97	97	2	96	96	96	96	96	96	96	96	96
3	96	96	96	96	96	96	96	96	96	3	95	95	95	95	95	95	95	95	95
4	94	94	94	94	94	94	94	94	94	4	93	93	93	93	93	93	93	93	93
5	92	92	92	92	92	92	92	92	92	5	91	91	91	91	91	91	91	91	91
6	90	90	90	90	90	90	90	90	90	6	90	90	90	90	90	90	90	90	90
7	89	89	89	89	89	89	89	89	89	7	89	89	89	89	89	89	89	89	89
8	88	88	88	88	88	88	88	88	88	8	88	88	88	88	88	88	88	88	88
9	87	87	87	87	87	87	87	87	87	9	87	87	87	87	87	87	87	87	87
10	86	86	86	86	86	86	86	86	86	10	86	86	86	86	86	86	86	86	86
15	83	83	83	83	83	83	83	83	83	15	83	83	83	83	83	83	83	83	83
20	81	81	81	81	81	81	81	81	81	20	81	81	81	81	81	81	81	81	81
25	79	79	79	79	79	79	79	79	79	25	79	79	79	79	79	79	79	79	79
30	77	77	77	77	77	77	77	77	77	30	77	77	77	77	77	77	77	77	77
40	74	74	74	74	74	74	74	74	74	40	74	74	74	74	74	74	74	74	74
50	72	72	72	72	72	72	72	72	72	50	72	72	72	72	72	72	72	72	72
60	70	70	70	70	70	70	70	70	70	60	70	70	70	70	70	70	70	70	70
80	67	67	67	67	67	67	67	67	67	80	67	67	67	67	67	67	67	67	67
100	65	65	65	65	65	65	65	65	65	100	65	65	65	65	65	65	65	65	65

*Minimisation of rejection* : From the formulae, it is evident that if  $p$  is increased then the amount of rejection will naturally decrease. Now  $p$  can only be increased if  $X$  is decreased. Suppose a unit having a large size is split up into a suitable number of smaller units, and its size is distributed between the split units, so that the total number of individuals in the population increases from  $N$  to  $N + N'$  and the maximum size decreases from  $X$  to  $X'$ . Let  $p'$  be the new probability of acceptance.

Then we have  $X = kX'$  where  $k > 1$ .

$$p' = \sum X_r / (N + N')X' \quad [p = \sum X_r / NX]$$

$$\therefore p'/p = N \cdot X/X'(N + N') = N.k/N + N' = \theta \text{ (say).}$$

Hence splitting will be effective when  $\theta$  is much greater than 1.

*Use of punched card machine* : Punched card machines for selection of samples by Lahiri's method may be used in the following way: (1) Select ' $m$ ' (as obtained from the Table) number of random digit punched cards such that  $1 \leq v \leq N$  and  $0 < \xi \leq X$ ,  $v, \xi$  are punched in two different fields. (2) Match those  $m$  cards with  $N$  population cards such that  $\xi \leq X_v$  for the  $v$ -th card to get the  $n$  desired samples. Only collator and sorter machines are used for this selection.

*Acknowledgement* : My thanks are due to Professor D. B. Lahiri for his valuable suggestions in preparing this note.

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# THE NATIONAL SAMPLE SURVEY

## NUMBER 22

### REPORT ON

### THE SAMPLE SURVEY OF MANUFACTURING INDUSTRIES : 1952

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# THE NATIONAL SAMPLE SURVEY

## NUMBER 22

### REPORT ON

### THE SAMPLE SURVEY OF MANUFACTURING INDUSTRIES : 1952

*This Report on the Sample Survey of Manufacturing Industries 1952 was prepared by the Indian Statistical Institute and is being published in the form in which it was submitted to the Government of India. The views contained in this report are not necessarily those of the Government of India.\**

## CHAPTER ONE

### INTRODUCTION

1.1. The second round of the sample survey of manufacturing industries in respect of establishments registered under the Factories Act, 1948 was conducted in 1953 to collect data for the calendar year 1952. Except for a change in the reference year from 1951 to 1952, there is hardly any difference between the two rounds of the survey<sup>1</sup>.

1.2. *Coverage* : This survey covered all establishments in India excluding Jammu and Kashmir, registered under sections 2m(i) and 2m(ii) of the Factories Act, 1948, i.e., those using power and engaging 10 or more workers on any day during the year and those engaging 20 or more workers but not using power, respectively. These manufacturing establishments are classified into 63 broad industrial groups under the Census of Manufacturing Industries Rules, 1945. Out of these, the establishments under the control of the Ministries of Railways and Defence were excluded from the scope of the survey.

1.3. *Sampling design* : The frame for sampling of establishments was prepared on the basis of lists obtained from the registers maintained in the offices of the Chief Inspectors of Factories of the various States. It was found that for India as a whole there were altogether 28872 factories in 1952, out of which 23204 were registered under section 2m(i) of the Indian Factories Act of 1948, and 5668 under section 2m(ii) of the said Act.

\* The draft report (No. D. 24) was submitted to the Government of India in June 1953.

<sup>1</sup> The first sample survey of manufacturing industries (SSMI) in India was conducted in 1951 at the instance of the National Income Committee to collect information for two calendar years, namely, 1949 and 1950; but the frame for this survey comprised establishments registered under section 2(j) of the Factories Act, 1934, i.e., power-operated establishments employing 20 or more workers on any day during the year. Moreover, the Directorate of Industrial Statistics was made responsible for the organisation of this survey whereas the Directorate of National Sample Survey was entrusted with this work in subsequent surveys.

1.4. In determining the sample size the main consideration was cost. Appropriate sample size was selected on *a priori* grounds with the object of getting all-India estimates of the value added by the manufacturing sector as a whole.

1.5. It was decided that about 3000 factories should be selected for the purpose of this survey. This total of 3000 was split into two categories proportional to the total number of workers under each of them. The first category, covering the establishments registered under section 2m(i) of the Factories Act, constituted the major part of the total number of establishments. The allocation among the 61 industries (and their sub-groups) was proportional to the product of the total number of workers and the standard deviation of output per worker (obtained from the results of the survey of 1949 and 1950). Within each industry the samples were then drawn after stratifying the list of factories, arranged in descending order of number of workers. The stratum size in each of these industries was arrived at by dividing the total number of workers by the total number of samples allocated therein. In some cases individual factories were found to be employing the number of workers scheduled to form a stratum. Such cases automatically were listed as samples. The remaining establishments were so stratified that the size of the stratum was 4, 6, 8, 12, 18, 24, 36, 48, 72, 96, 114, 144 or 192 establishments and from each stratum two sample units were selected at random but without replacement.

1.6. The second category of factories, falling under section 2m(ii) of the Factories Act, were very few in the case of certain industries and there were marked clustering in regard to certain others. Here the allocation was governed by the proportion of total number of workers employed under each industry type. Stratification and selection of samples were done separately for 15 industries as in the case of factories under section 2m(i). The remaining industry classes were lumped into a few groups, and samples were selected as before considering each group as one industry.

1.7. *Sample Coverage*: The samples selected covered 10.4 per cent and 58.1 per cent of the total number of factories and workers respectively. There are some variations as between factories using and not using power in this respect, as may be seen from the following table.

TABLE (1.1): SAMPLE COVERAGE

type of factory	number of factories			number of workers(000)		
	universe	sample	percentage covered	universe	sample	percentage covered
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. using power	23,204	2,665	11.5	2,527	1,577	62.4
2. not using power	5,668	338	6.0	309	71	22.9
3. all factories	28,872	3,003	10.4	2,836	1,648	58.1

1.8. *Estimation Procedure* : The aggregate estimate for any industry is a sum of aggregate estimates in respect of the constituent strata obtained by inflation factors which are reciprocals of the sampling fractions. A number of tables show estimates by sub-samples. In these cases only one sample out of the two in a stratum has been considered in each case. In regard to a stratum which involves only one factory constituting it the aggregates for such strata have to be added to the independent estimates obtained from the strata with two samples in each.

#### QUESTIONNAIRE

1.9. The questionnaire contained different items and particularly the following :

- (1) value of fixed capital which included land and buildings, plant and machinery, and other fixed assets;
- (2) value of working capital which included stocks of fuel and raw materials, stocks of products and by-products, and partly finished products, and cash in hand and at bank;
- (3) rent on fixed assets secured on lease;
- (4) duration of working period;
- (5) labour employed with various breakdowns, and wages and salaries paid to them;
- (6) value and quantity of input which included fuels, electricity, raw materials, chemicals and work done for the factory by other concerns; and
- (7) value and quantity of output which included products and by-products, and work done by the factory for customers.

A facsimile of the schedule of inquiry has been annexed for facility of reference.

#### CONCEPTS AND DEFINITIONS

1.10. *Establishments* : Factories registered under sections 2m(i) and 2m(ii) of the Indian Factories Act, 1948, were taken into account.

1.11. *Fixed and working capital* : All particulars about the capital items were obtained as they stood in the books of accounts of the establishments on 31st December, 1952. Where, however, the closing date occurred anywhere between May and December of 1952, the information was taken as on that date. Where the closing date was later than December, 1952 but within April, 1953, the information was collected as on the date after December, 1952.

1.12. The book value of fixed capital generally represented the price of installations plus the value of improvements and additions made minus the value of obsolescences and sales and the annual depreciation charges since the date of installation. The book values of different items of working capital generally represented the following: (a) the inventory values of raw materials, fuels, etc. represented value



at cost; (b) in the case of finished products only ex-factory value was taken into account; (c) appropriate imputed values adopted by the factory for obtaining inventory valuation were recorded in regard to semi-finished products; and (d) cash in hand and at bank was recorded according to the position found in the accounts.

1.13. *Number of working days* : It means the number of days on which any manufacturing operation was carried on in the factory. The days on which repair and maintenance work only was done, were excluded.

1.14. *Number of persons employed* : The average number of persons employed by each factory, under various heads, such as workers, persons other than workers, etc. was computed by dividing the total attendance on all working days by the total number of such working days during the period under reference. The number of persons employed on any working day would be equal to the total attendance in all the shifts. In recording the total attendance no distinction was made between substitute or temporary employees and permanent employees. In other words, this term meant average attendance per working day.

1.15. *Worker* : A worker would be any person employed for wages in the manufacturing process or in any kind of work incidental to or directly connected with the manufacturing process but would not include any person solely employed in a clerical capacity or engaged in supervisory cadres. Information on number of workers employed through contractors was sought but could not be obtained.

1.16. *Persons other than workers* : This term included all clerical, supervisory, administrative and technical staff, the watch and ward staff including office peons, orderlies etc.

1.17. *Man-hours worked* : Man-hour calculations related only to workers directly employed by the establishments. In order to arrive at total man-hours, the days, both working and those on which maintenance and repair work only was done, were taken into consideration. The number of man-hours worked on any day would be obtained by adding, for all the shifts, the product of the total attendance in the shift and the length of that shift in hours.

1.18. *Wages and salaries* : Salaries, wages and other emoluments included, besides salaries and wages, allowances (cost of living, D.A., overtime allowances) and any other payments in cash to individual workers, such as bonuses and compensation for accidents.

1.19. *Other benefits* : These included various benefits over and above wages, such as free or subsidised housing, foodgrains at concessional rates, etc. In addition, employers' contributions to employees' provident fund were also recorded.

1.20. *Fuels and materials consumed* : This excluded any fuels or materials manufactured within the factory and consumed in it. Electrical energy generated and consumed within the factory was a case in point. The coal used in generating the energy was, however, included since it was brought into the factory from outside,

## MANUFACTURING INDUSTRIES : 1952

1.21. *Value of fuels, materials, etc. at factory* : This was the cost of materials, etc. delivered at the factory and included purchase price transport charges and other incidental costs.

1.22. *Work done for factory by other concerns* : This term denoted the cost of services rendered to the factory by other concerns and by individuals other than its own employees.

1.23. *Work done for customers* : Value of industrial servicing rendered to customers was covered by this item.

1.24. *Input* : It consisted of the values of fuel, raw materials and chemicals, energy and industrial servicing purchased from other concerns.

1.25. *Output* : This term comprised the ex-factory values of products and by-products and the industrial servicing sold to other concerns.

1.26. *Value added by manufacture* : This represented the difference between the values of output and input, gross of depreciation.

## CHAPTER TWO

## RESULTS OF THE SURVEY

2.1. Figures for the whole of India have been presented below in a number of tables.

## FIXED CAPITAL AND WORKING CAPITAL

2.2. Estimates of fixed and working capital used in all the industries taken together for 1952 are shown in Table (2.1).

TABLE (2.1) ESTIMATES OF FIXED AND WORKING CAPITAL FOR ALL INDUSTRIES IN 1952

number of samples: 3,003

item	estimated value in rupees (crores)	percentage to total		
		fixed capital	working capital	total capital
(1)	(2)	(3)	(4)	(5)
1. land and building	247.59	32.21	—	16.40
2. plant and machinery	449.19	58.43	—	29.76
3. other fixed assets	71.95	9.36	—	4.77
4. total fixed capital (1 to 3)	768.73	100.00	—	50.93
5. raw materials, fuels in stock	351.40	—	47.44	23.28
6. finished and semi-finished products in stock	305.74	—	41.27	20.25
7. cash in hand and at bank	83.63	—	11.29	5.54
8. total working capital (5 to 7)	740.77	—	100.00	49.07
9. total fixed and working capital (4 and 8)	1509.50	—	—	100.00
10. rent etc. paid on total fixed capital	4.43	0.58	—	—

2.3. The total value of fixed capital estimated for all industrial establishments was about Rs.769 crores in 1952. Of the total, the proportion for plant and machinery was 58.4 per cent and that for land and buildings 32.2 per cent. Other fixed assets such as furniture, transport equipment, etc. amounted to 9.4 per cent only. Rent paid by industries on fixed assets during 1952 was negligible and amounted to less than 1 per cent of the total value of fixed assets.

2.4. The total value of working capital was about Rs.741 crores. Raw materials and fuels in stock formed about 47 per cent of the working capital, stock of finished and semi-finished products about 41 per cent, and cash in hand and at bank about 11 per cent. Total value of fixed and working capital came to about Rs.1509 crores, and the ratio between the two was 51 : 49.

# MANUFACTURING INDUSTRIES : 1952

## EMPLOYMENT AND EARNINGS

2.5. Table (2.2) gives the estimates of the number of workers and persons other than workers, per working day.

TABLE (2.2) : ESTIMATED NUMBER OF PERSONS EMPLOYED PER WORKING DAY IN 1952

number of samples : 3,003

item	number in thousands	percentage to total
(1)	(2)	(3)
1. workers	2,580	87.66
2. persons other than workers	363	12.34
3. total	2,943	100.00

2.6. The total number of employees per working day in 1952 was estimated at 29.43 lakhs ; of them 87.66 per cent were workers, and the rest 'persons other than workers'.

2.7. Estimates of wages, salaries and benefits paid to the employees in 1952 are shown in Table (2.3). Total remunerations paid to all employees amounted to Rs.320.25 crores. Of this, 95.84 per cent constituted wages and salaries and 4.16 per cent other benefits. Read with figures of Table (2.2), it will be seen that the workers who were 88 per cent of the employees received a little over 72 per cent of total wages and salaries and 'persons other than workers' constituting about 12 per cent of employees received a little over 21 per cent of total wages and salaries. Payments made to employees through contractors amounted to Rs.6.98 crores. The number employed by contractors could not, however, be ascertained.

TABLE (2.3) : ESTIMATES OF WAGES, SALARIES AND BENEFITS PAID TO EMPLOYEES IN 1952

number of samples : 3,003

item	amount in rupees (crores)	percentage to total
(1)	(2)	(3)
1. wages to workers	231.84	72.40
2. payment to employees through contractors	6.98	2.18
3. salaries to employees other than workers	68.12	21.26
4. total	306.94	95.84
5. other benefits	13.31	4.16
6. total of all payments (4+5)	320.25	100.00



2.8 Figures for man hours for all the industries taken together for the year 1952 are given in Table (2.4). It may be noted that difficulties in field operation restricted the design of the schedule to the recording of the combined figures of man-hours worked for production as well as for repair and maintenance. As a result, the estimate for man-hours worked per worker could not exclude the man-hours spent on repair and maintenance. But the latter is of such a small dimension that it need not deflect the result appreciably. On average, the total wage for a worker in 1952 came to Rs.899 and the average per working day was Rs.4.24. The total salary per 'person other than workers' came to Rs.1,875 in 1952 and the average per working day was Rs.8.84. It is needless to mention that the estimated earnings are approximate because the average number of persons employed has been calculated on the basis of working days only whereas remunerations covered those days on which repairs and maintenance work was done.

TABLE (2.4) ESTIMATES OF MAN HOURS WORKED, RATE OF EARNING AND NUMBER OF WORKING DAYS IN 1952

item	estimate
(1)	(2)
1. man-hours worked in 1952 in crore hours	503.42
2. man-hours per worker in hours	2184
3. earning per man-hour in rupees	0.41
4. number of working days per establishment in days	212

2.9 Table (2.5) shows the average earnings of workers and other employees for 1952.

TABLE (2.5): EARNING PER PERSON FOR THE YEAR AND PER WORKING DAY IN 1952

item	earning for the year in rupees	earning per working day in rupees
(1)	(2)	(3)
1. workers	899	4.24
2. persons other than workers	1,875	8.84
3. all employees	1,019	4.81

# MANUFACTURING INDUSTRIES : 1952

## INPUT, OUTPUT AND VALUE ADDED

2.10. Table (2.6) shows estimated values of input, output with breakdowns and value added by manufacture.

TABLE (2.6) ESTIMATED VALUES OF INPUT, OUTPUT AND VALUE ADDED BY MANUFACTURE IN 1952

item	estimated value in rupees (crores)	percentage to total	
		input	output
(1)	(2)	(3)	(4)
1. fuels, lubricants and electricity consumed	81.69	5.59	3.94
2. raw materials consumed	1362.79	93.28	65.71
3. work done for the factory by other concerns	16.44	1.13	0.79
4. value of input	1460.92	100.00	70.44
5. products and by-products	1999.64	—	96.42
6. work done by the factory for other concerns	74.22	—	3.58
7. value of output	2073.86	—	100.00
8. value added (7-4)	612.94	—	29.56

2.11. The value of total input in 1952 for all industries was estimated at Rs.1460.92 crores. Value of raw materials amounted to Rs.1362.79 crores or 93 per cent of the total input. Value of work done by other concerns came to only 1.13 per cent. The value of total output for the year was estimated at Rs.2073.86 crores. Products and by-products accounted for Rs.1999.64 crores, or 96.42 per cent, and earnings for services rendered Rs.74.22 crores or 3.58 per cent of the total output. The value added by manufacture gross of depreciation was estimated at Rs.612.94 crores. The proportion of this amount to total value of output was 29.56 per cent.

## FACTORIES USING POWER AND NOT USING POWER

2.12. About 80 per cent of all the registered establishments were using power and about 20 per cent were not using power. Comparisons have been made on the basis of a number of selected items to show the relative importance of the two groups. Table (2.7) gives the totals in regard to these items for the total groups separately and for all the factories taken together. Taking the totals of all factories as 100, the proportions for the two groups have also been shown.

TABLE 2.7 COMPARISONS BETWEEN FACTORIES USING POWER AND NOT USING POWER ON THE BASIS OF A FEW SELECTED ITEMS IN 1952

item	unit	total			percentage		
		facto- ries using power	facto- ries not using power	all facto- ries	facto- ries using power	facto- ries not using power	all facto- ries
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. plant and machinery	rupees (000)	447.05	2.14	449.19	99.52	0.48	100.00
2. total fixed capital	"	757.71	11.02	768.73	98.57	1.43	100.00
3. working capital	"	719.57	21.20	740.77	97.14	2.86	100.00
4. fixed and working capital (2+3)	"	1477.28	32.22	1509.50	97.87	2.13	100.00
5. number of employees	number (000)	2650.69	292.92	2943.61	90.05	9.95	100.00
6. man-hours worked	hours (000)	510.34	53.08	563.42	90.58	9.42	100.00
7. payment to all employees	rupees (000)	304.90	15.35	320.25	95.21	4.79	100.00
8. output	"	1953.60	120.26	2073.86	94.20	5.80	100.00
9. input	"	1369.37	91.55	1460.92	93.73	6.27	100.00
10. value added (8-9)	"	584.23	28.71	612.94	95.32	4.68	100.00
11. number of samples	—	2665	338	3003	88.71	11.29	100.00
12. total number of factories	—	23204	5068	28272	80.37	19.63	100.00

2.13. Although in terms of number, the factories not using power came to about 20 per cent of the total, their share in all important aspects was much less. Their proportion of number of employees was about 10 per cent. The proportion for value added by manufacture was about 5 per cent. The proportion for fixed and working capital was only 2 per cent. To emphasise the contrast between these two types of factories, the average figures per establishment regarding a number of items are given in Table (2.8).

TABLE 2.8 PER ESTABLISHMENT FIGURES FOR FACTORIES USING POWER AND NOT USING POWER IN RESPECT OF A SELECTED NUMBER OF ITEMS IN 1952

item	unit	factories using power	factories not using power	all factories
(1)	(2)	(3)	(4)	(5)
1. plant and machinery	rupees (000)	193	4	156
2. fixed capital	"	327	19	266
3. working capital	"	310	37	257
4. fixed and working capital (2+3)	"	637	56	523
5. number of employees	persons	114	52	102
6. man-hours worked	hours (000)	220	94	195
7. payment to all employees	rupees (000)	132	27	111
8. output	"	842	212	718
9. input	"	590	162	506
10. value added (8-9)	"	252	50	212

## MANUFACTURING INDUSTRIES : 1952

2.14. It will be seen that although the number of employees per working day for a factory not using power was nearly half of the number for a power using factory, the average amount of value added in manufacture was only about a fifth in comparison. The position of factory not using power in respect of fixed and working capital was still more unfavourable. Another comparison has been given in Table (2.9) based on figures per worker.

TABLE 2.9. FIGURES PER WORKER ON SELECTED ITEMS FOR FACTORIES USING POWER AND NOT USING POWER IN 1952

Item	unit	factories using power	factories not using power	all factories
(1)	(2)	(3)	(4)	(5)
1. plant and machinery	rupees	1,933	80	1,743
2. fixed capital	"	3,277	411	2,980
3. working capital	"	3,112	791	2,871
4. fixed and working capital (2+3)	"	6,389	1,202	5,851
5. man-hours worked	hours	2,208	1,977	2,184
6. total payment to all employees	rupees	956	406	899
7. output	"	8,450	4,487	8,038
8. input	"	5,923	2,416	5,662
9. value added (7-8)	"	2,527	1,071	2,376

2.15. Here again it will be seen that although the man-hours worked were not very different, the output was low for the factories not using power. In other respects also the figures for this type of factories were low.

### RELIABILITY OF ESTIMATES

2.16. There is hardly any published material which can be compared with the S.S.M.I. data. The C.M.I. data, although available in published form, are not strictly comparable. From the point of view of both geographical and industrial coverage there was a divergence between the C.M.I. and S.S.M.I. data. Again within each industry the C.M.I. covered only those factories which used power and employed 20 or more workers on any day. In contrast S.S.M.I. covered all the factories using power and employing 10 or more workers and those not using power employing 20 or more workers. However, the internal consistency of these data can be examined. The difference between the two interpenetrating sub-samples may give an indication of the margin of uncertainty in the estimates. Table (2.10) gives the estimates of some important items by sub-samples and indicates the deviation between the sub-samples as percentage of the average value.



TABLE 2.10. COMPARISON OF ESTIMATES OF SOME ITEMS BY SUB SAMPLES IN 1957

item	unit	sub- sample 1	sub- sample 2	com- bined	percentage difference col. (3)-col. (4) col. (5)
(1)	(2)	(3)	(4)	(5)	(6)
1. fixed and working capital	rupees (crores)	1553.56	1465.46	1509.50	5.84
2. number of employees	thousands	2938.48	2948.74	2943.61	0.35
3. payment to all employees	rupees (crores)	323.73	316.77	320.25	2.17
4. total man-hours worked	hours (crores)	560.38	560.46	563.42	1.08
5. value of input	rupees (crores)	1459.80	1462.03	1460.92	0.15
6. value of output	..	2072.33	2075.38	2073.86	0.15
7. value added by manufacture (6-5)	..	612.53	613.35	612.94	0.14
8. number of samples	actual	2051	2051	3003	

# MANUFACTURING INDUSTRIES : 1952

## APPENDIX I

### LIST OF TABLES

#### FRAME AND DISTRIBUTION OF SAMPLES

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TABLE 1 EXTENT OF SAMPLING NUMBER OF FACTORIES BY INDUSTRY FACTORIES USING POWER: 1952

CMI classification		number of factories		
number	description	universe	sample surveyed	per cent covered
(1)	(2)	(3)	(4)	(5)
1. 01	wheat flour	154	38	24.68
2. 02	rice milling	2544	201	7.90
3. 03	biscuit making	138	17	12.32
4. 04	fruits and vegetable processing	28	8	28.57
5. 05a	sugar : vacuum pan factory	154	94	61.04
6. 05b	" : refineries	26	4	15.38
7. 05c	" : gur factories	464	16	3.45
8. 06	distilleries and breweries	76	20	26.32
9. 07	starch	113	10	8.85
10. 08	vegetable oil (including hydrogenated oil)	1752	251	14.33
11. 09	paints and varnishes	82	16	19.51
12. 10	soap	80	26	32.50
13. 11	tanning	133	32	24.06
14. 12	cement	19	19	100.00
15. 13	glass and glassware	181	41	22.65
16. 14	ceramics	63	17	26.98
17. 15	plywood and tea chests	73	17	23.29
18. 16	paper and paper board	63	41	65.08
19. 17	matches	84	28	33.33
20. 18	cotton textiles : unclassified	19	9	47.37
21. 18a	" : spinning mills	123	34	27.64
22. 18b	" : composite mills	282	184	65.25
23. 18c	" : powerloom mills	412	20	4.85
24. 19	woollen textiles	70	20	28.57
25. 20	jute textiles	107	67	62.62
26. 21	chemicals (including drugs)	357	56	15.59
27. 22a	aluminium, copper and brass : primary products	5	4	80.00
28. 22b	" " : secondary products	357	53	14.85
29. 23a	iron and steel : primary products	7	7	100.00
30. 23b	" : secondary products	1195	87	7.28
31. 24	bicycles	39	11	28.21
32. 25	sewing machines	6	6	100.00
33. 27	electric lamps	8	7	87.50
34. 28	electric fans	33	9	27.27

# MANUFACTURING INDUSTRIES : 1952

TABLE I. *Contd.* EXTENT OF SAMPLING. NUMBER OF FACTORIES BY INDUSTRY—  
FACTORIES USING POWER : 1952

CMI classification		number of factories		
number	description	universe	sample surveyed	per cent covered
(1)	(2)	(3)	(4)	(5)
35. 29	general engineering and electrical engineering : unspecified	293	17	5.76
36. 29a	general engineering and electrical engineering : repairing works	584	32	5.48
37. 29b	general engineering and electrical engineering : manufacturing	1037	68	6.56
38. 30	footwear and leather manufacturing	37	13	35.14
39. 31	rubber and rubber manufacturing	140	46	32.86
40. 32	enamelware	20	5	25.00
41. 33	hume pipes and other cement and cement concrete products	79	11	13.92
42. 34	asbestos and asbestos cement products	5	5	100.00
43. 35	bricks, tiles, lime and surki manufacturing	305	17	5.57
44. 36	lac	16	6	37.50
45. 37	turpentine and rosin	3	3	100.00
46. 38	plastics (including gramophone records)	76	8	10.53
47. 39	petroleum refining	4	3	75.00
48. 40	saw milling	606	25	4.13
49. 41	woodware (including furniture)	122	16	13.11
50. 42	tea manufacturing	1204	121	10.05
51. 43	tobacco products	94	51	54.26
52. 44	groundnut decorticating etc.	424	36	8.49
53. 45	printing and bookbinding etc.	1586	70	4.41
54. 46	webbing narrow fabrics	83	8	9.64
55. 47	hosiery and other knitted goods	324	12	3.70
56. 48	thread and thread ball making	17	3	17.65
57. 49	textile dyeing, bleaching etc.	185	24	12.97
58. 50	clothing and tailoring	28	4	14.29
59. 51	cotton ginning and pressing	2146	173	8.06
60. 52	rope making	7	6	85.71
61. 53	silk and artificial silk	553	35	6.33
62. 54	jute pressing	35	11	31.43
63. 55	electricity generation and transformation	361	30	8.31
64. 56	automobiles and coach building	730	92	12.60
65. 57	ship building and repairing	42	14	33.33
66. 60	aircraft assembling and repairing services	17	4	23.53
67. 62	textile machineries and accessories	158	14	8.86
68. 63	unspecified industries	2634	212	8.05
69.	all industries	23,204	2665	11.49



TABLE 2. EXTENT OF SAMPLING: NUMBER OF FACTORIES BY INDUSTRY—FACTORIES NOT USING POWER: 1952

CMI classification		number of factories		
number	description	universe	sample surveyed	per cent covered
(1)	(2)	(3)	(4)	(5)
1. 10	soap	24	2	8.33
2. 11	tanning	220	8	3.64
3. 13	glass and glassware	66	9	13.64
4. 17	matches	99	5	5.05
5. 19	woollen textiles	30	4	13.33
6. 21	chemicals (including drugs)	51	5	9.80
7. 22b	aluminium, copper and brass : secondary products	68	6	8.82
8. 29a	general engineering and electrical engineering : repairing works	12	2	16.67
9. 29b	general engineering and electrical engineering : manufacturing	18	2	11.11
10. 35	bricks, lime, tiles and surki manufacturing	593	26	4.38
11. 36	lac	128	6	4.69
12. 43	tobacco products	2031	103	5.02
13. 44	groundnut decorticating etc.	191	41	21.47
14. 45	printing and bookbinding etc.	106	6	5.66
15. 56	automobiles and coach building	31	4	12.90
16.	other industries	2000	109	5.50
17.	all industries	5668	338	5.96

TABLE 3: EXTENT OF SAMPLING: NUMBER OF FACTORIES BY INDUSTRY—ALL FACTORIES: 1952

CMI classification		number of factories		
number	description	universe	sample surveyed	per cent covered
(1)	(2)	(3)	(4)	(5)
1. 10	soap	104	28	26.92
2. 11	tanning	353	40	11.33
3. 13	glass and glassware	247	50	20.24
4. 17	matches	183	33	18.03
5. 19	woollen textiles	100	24	24.00
6. 21	chemicals (including drugs)	408	61	14.95
7. 22b	aluminium, copper and brass : secondary products	425	59	13.88
8. 29a	general engineering and electrical engineering : repairing works	596	34	5.70
9. 29b	general engineering and electrical engineering : manufacturing	1055	70	6.64
10. 35	bricks, tiles, lime and surki manufacturing	898	43	4.79
11. 36	lac	144	12	8.33
12. 43	tobacco products	2125	153	72.00
13. 44	groundnut decorticating etc.	615	77	12.52
14. 45	printing and bookbinding etc.	1692	76	4.49
15. 56	automobiles and coach building	761	96	12.61
16.	other industries	19166	2147	11.20
17.	all industries	28872	3003	10.40

# MANUFACTURING INDUSTRIES : 1952

TABLE 4 : EXTENT OF SAMPLING : NUMBER OF WORKERS BY INDUSTRY - FACTORIES  
USING POWER : 1952

CMI classification		number of workers		
number	description	universe	sample surveyed	per cent covered
(1)	(2)	(3)	(4)	(5)
1. 01	wheat flour	7,627	4,505	59.60
2. 02	rice milling	55,619	10,134	18.22
3. 03	biscuit making	7,595	3,439	45.28
4. 04	fruits and vegetables processing	1,118	674	60.29
5. 05a	sugar : vacuum pan factory	94,582	78,669	83.18
6. 05b	„ : refineries	1,738	1,065	61.28
7. 05c	„ : gur factories	9,418	719	7.63
8. 06	distilleries and breweries	7,901	4,717	59.70
9. 07	starch	3,504	1,486	42.41
10. 08	vegetable oil (including hydrogenated oil)	65,388	24,140	36.92
11. 09	paints and varnishes	5,253	3,065	58.35
12. 10	soap	8,155	7,189	88.15
13. 11	tanning	9,089	5,662	62.30
14. 12	cement	19,769	19,769	100.00
15. 13	glass and glassware	31,544	17,973	56.98
16. 14	ceramics	21,262	15,845	74.56
17. 15	plywood and tea chests	7,094	4,540	64.00
18. 16	paper and paper board	22,660	22,132	97.67
19. 17	matches	15,077	12,730	84.43
20. 18	cotton textiles : unclassified	14,594	13,261	90.86
21. 18a	„ : spinning mills	94,863	67,709	70.32
22. 18b	„ : composite mills	586,478	519,661	88.61
23. 18c	„ : powerloom mills	24,720	10,278	41.58
24. 19	woollen textile	15,106	12,963	85.81
25. 20	jute textile	307,203	236,438	76.96
26. 21	chemicals (including drugs)	40,101	24,421	60.90
27. 22a	aluminium, copper and brass : primary products	4,161	4,161	100.00
28. 22b	„ „ „ : secondary products	17,885	10,428	58.51
29. 23a	iron and steel : primary products	55,637	55,637	100.00
30. 23b	„ : secondary products	76,190	33,761	44.31
31. 24	bicycles	2,365	1,972	83.38
32. 25	sewing machines	1,750	1,750	100.00
33. 27	electric lamps	1,332	1,332	100.00
34. 28	electric fans	4,551	3,968	87.19

TABLE 1—2. EXTENT OF SAMPLING NUMBER OF WORKERS BY INDUSTRY  
FACTORIES USING POWER : 1952

CMI classification		number of workers		
number	description	universe	sample surveyed	per cent covered
(1)	(2)	(3)	(4)	(5)
35. 29	general engineering and electrical engineering: unspecified	23,911	9,892	41.37
36. 29a	general engineering and electrical engineering: repairing works	28,663	8,128	28.36
37. 29b	general engineering and electrical engineering: manufacturing	53,406	24,818	46.47
38. 30	footwear and leather manufacturing	13,931	13,289	95.39
39. 31	rubber and rubber manufacturing	15,416	12,346	80.09
40. 32	enamelware	1,614	1,150	71.25
41. 33	hume pipes and other cement and cement concrete products	3,315	1,493	45.04
42. 34	asbestos and asbestos cement products	2,875	2,875	100.00
43. 35	bricks, tiles, lime and surki manufacturing	22,750	3,849	16.92
44. 36	lac	1,745	1,217	69.74
45. 37	turpentine and rosin	311	311	100.00
46. 38	plastics (including gramophone records)	3,770	1,166	30.93
47. 39	petroleum refining	1,270	1,270	100.00
48. 40	saw milling	17,671	4,467	25.28
49. 41	woodware (including furniture)	4,882	1,610	32.98
50. 42	tea manufacturing	117,693	20,217	17.18
51. 43	tobacco products	27,618	26,831	97.15
52. 44	groundnut decorticating etc.	14,155	8,017	56.64
53. 45	printing and bookbinding etc.	72,358	15,474	21.39
54. 46	webbing narrow fabrics	4,199	1,697	40.41
55. 47	hosiery and other knitted goods	10,422	1,928	18.50
56. 48	thread and thread ball making	779	659	84.60
57. 49	textiles dyeing, bleaching etc.	17,832	10,856	60.88
58. 50	clothing and tailoring	5,360	4,679	87.29
59. 51	cotton ginning and pressing	120,498	17,485	14.51
60. 52	rope making	1,430	1,329	92.94
61. 53	silk and artificial silk	45,529	14,239	31.27
62. 54	jute pressing	4,952	3,493	70.54
63. 55	electricity generations and transformation	26,860	13,220	49.22
64. 56	automobiles and coach building	39,918	21,481	53.81
65. 57	ship building and repairing	19,639	16,428	83.65
66. 60	aircraft assembling and repairing services	12,575	11,674	92.83
67. 62	textile machineries and accessories	7,833	3,750	47.88
68. 63	unspecified industries	140,888	59,951	42.55
69.	all industries	2,527,387	1,577,482	62.41

# MANUFACTURING INDUSTRIES : 1952

TABLE 5 : EXTENT OF SAMPLING : NUMBER OF WORKERS BY INDUSTRY : FACTORIES  
NOT USING POWER : 1952

CMI classification		number of workers		
number	description	universe	sample surveyed	per cent covered
(1)	(2)	(3)	(4)	(5)
1. 10	soap	543	66	12.18
2. 11	tanning	6,447	643	9.96
3. 13	glass and glassware	2,984	1,178	39.79
4. 17	matches	5,038	1,055	20.94
5. 19	woollen textiles	1,648	402	24.39
6. 21	chemicals (including drugs)	1,848	427	23.11
7. 22b	aluminium, copper and brass : secondary products	1,189	281	19.43
8. 29a	general engineering and electrical engineering : repairing works	250	49	19.60
9. 29b	general engineering and electrical engineering : manufacturing	238	45	3.37
10. 35	bricks, tiles, lime and surki manufacturing	28,170	4,064	14.43
11. 36	lac	7,413	905	12.21
12. 43	tobacco products	127,297	27,679	21.74
13. 44	groundnut decorticating etc.	44,401	20,136	45.35
14. 45	printing and bookbinding etc.	2,405	362	15.05
15. 56	automobiles and coach building	1,475	637	43.19
16.	other industries	76,906	12,945	16.83
17.	all industries	309,222	70,822	22.90

TABLE 6 : EXTENT OF SAMPLING : NUMBER OF WORKERS BY INDUSTRY—ALL FACTORIES : 1952

CMI classification		number of workers		
number	description	universe	sample surveyed	per cent covered
(1)	(2)	(3)	(4)	(5)
1. 10	soap	8,698	7,255	83.41
2. 11	tanning	15,536	6,304	40.58
3. 13	glass and glassware	35,498	19,151	53.95
4. 17	matches	20,115	13,785	68.53
5. 19	woollen textiles	16,754	13,365	79.77
6. 21	chemicals (including drugs)	41,949	24,848	59.23
7. 22b	aluminium, copper and brass : secondary products	19,074	10,659	55.88
8. 29a	general engineering and electrical engineering : repairing works	28,193	8,177	28.28
9. 29b	general engineering and electrical engineering : manufacturing	53,644	25,063	46.72
10. 35	bricks, tiles, lime and surki manufacturing	50,920	7,913	15.54
11. 36	lac	9,158	2,122	23.17
12. 43	tobacco products	154,915	54,509	35.19
13. 44	groundnut decorticating etc.	58,556	28,153	48.08
14. 45	printing and bookbinding etc.	72,763	15,836	21.18
15. 56	automobiles and coach building	41,393	22,118	53.43
16.	other industries	2,206,723	1,389,046	62.94
17.	all industries	2,836,609	1,648,304	58.11



TABLE 1. DISTRIBUTION OF SUB-SAMPLES BY INDUSTRY FACTORIES  
USING POWER: 1952

CMI classification		number of samples			
number	description	*common factories	sub- sample 1	sub- sample 2	total
(1)	(2)	(3)	(4)	(5)	(6)
1. 01	wheat flour	16	27	27	38
2. 02	rice milling	31	116	116	201
3. 03	biscuit making	5	11	11	17
4. 04	fruits and vegetable processing	4	6	6	8
5. 05a	sugar : vacuum pan factory	68	81	81	94
6. 05b	" : refineries	2	3	3	4
7. 05c	" : gur factories	2	9	9	16
8. 06	distilleries and breweries	10	15	15	20
9. 07	starch	2	6	6	10
10. 08	vegetable oil (including hydrogenated oil)	65	158	158	251
11. 09	paints and varnishes	6	11	11	16
12. 10	soap	20	23	23	26
13. 11	tanning	8	24	24	32
14. 12	cement	19	19	19	19
15. 13	glass and glassware	15	28	28	41
16. 14	ceramics	11	14	14	17
17. 15	plywood and tea chests	9	13	13	17
18. 16	paper and paper board	39	40	40	41
19. 17	matches	20	24	24	28
20. 18	cotton textiles : unclassified	5	7	7	9
21. 18a	" : spinning mills	22	28	28	34
22. 18b	" : composite mills	142	163	163	184
23. 18c	" : powerloom mills	4	12	12	20
24. 19	woollen textiles	14	17	17	20
25. 20	jute textiles	45	56	56	67
26. 21	chemicals (including drugs)	28	42	42	56
27. 22a	aluminium, copper and brass : primary products	4	4	4	4
28. 22b	" : secondary products	25	39	39	53
29. 23a	iron and steel : primary products	7	7	7	7
30. 23b	" : secondary products	27	57	57	87
31. 24	bicycles	7	9	9	11
32. 25	sewing machines	6	6	6	6
33. 27	electric lamps	7	7	7	7
34. 28	electric fans	7	8	8	9

\*Factories falling in some strata were completely enumerated. These were included in both the sub-samples,

# MANUFACTURING INDUSTRIES : 1952

TABLE 7 (Contd.) DISTRIBUTION OF SUB-SAMPLES BY INDUSTRY FACTORIES USING POWER : 1952

CMI classification		number of factories			total
number	description	*common factories	sub-sample-1	sub-sample-2	
(1)	(2)	(3)	(4)	(5)	(6)
35. 29	general engineering and electrical engineering - unspecified	7	11	11	17
36. 29a	" " " : repairing works	6	10	10	22
37. 29b	" " " : manufacturing	24	46	46	69
38. 30	footwear and leather manufacturing	11	12	12	13
39. 31	rubber and rubber manufacturing	36	36	36	46
40. 32	enamelware	1	3	3	5
41. 33	hume pipes and other cement and cement concrete products	5	8	8	11
42. 34	asbestos and asbestos cement products	5	5	5	5
43. 35	bricks, tiles, lime and surki manufacturing	3	10	10	17
44. 36	lac	4	5	5	6
45. 37	turpentine and rosin	3	3	3	3
46. 38	plastics (including gramophone records)	2	5	5	5
47. 39	petroleum refining	3	3	3	3
48. 40	saw milling	9	17	17	25
49. 41	woodware (including furniture)	2	9	9	16
50. 42	tea manufacturing	3	62	62	121
51. 43	tobacco products	41	46	46	81
52. 44	groundnut decorticating etc.	14	25	25	36
53. 45	printing and bookbinding etc.	4	37	37	70
54. 46	webbing narrow fabrics	2	5	5	8
55. 47	hosiery and other knitted goods	2	7	7	12
56. 48	thread and thread ball making	1	2	2	3
57. 49	textiles dyeing, bleaching etc.	10	17	17	24
58. 50	clothing and tailoring	2	3	3	4
59. 51	cotton ginning and pressing	5	89	89	17
60. 52	rope making	4	5	5	6
61. 53	silk and artificial silk	11	23	23	35
62. 54	jute pressing	5	8	8	11
63. 55	electricity generation and transformation	10	20	20	30
64. 56	automobiles and coach building	34	63	63	92
65. 57	ship building and repairing	10	12	12	14
66. 60	aircraft assembling and repairing	2	3	3	4
67. 62	textile machineries and accessories	8	11	11	14
68. 63	unspecified industries	66	139	139	212
69.	all industries	1053	1859	1859	2665

\*Factories falling in some strata were completely enumerated. These were included in both the sub-samples.

TABLE 8: DISTRIBUTION OF SUB-SAMPLES BY INDUSTRY—FACTORIES NOT USING POWER : 1952

CMI classification		number of samples			
number	description	*common factories	sub-sample-1	sub-sample-2	total
(1)	(2)	(3)	(4)	(5)	(6)
1. 10	soap	—	1	1	2
2. 11	tanning	—	4	4	8
3. 13	glass and glassware	5	7	7	9
4. 17	matches	1	3	3	5
5. 19	woollen textiles	—	2	2	4
6. 21	chemicals (including drugs)	3	4	4	5
7. 22b	aluminium, copper and brass : secondary products	—	3	3	6
8. 29a	general engineering and electrical engineering : repairing works	—	1	1	2
9. 29b	general engineering and electrical engineering : manufacturing	—	1	1	2
10. 35	bricks, tiles, lime and surki manufacturing	—	13	13	26
11. 36	lac	—	3	3	6
12. 43	tobacco products	8	55	55	102
13. 44	groundnut decorticating etc.	7	24	24	41
14. 45	printing and bookbinding etc.	2	4	4	6
15. 56	automobiles and coach building	—	2	2	4
16.	other industries	20	65	65	110
17.	all industries	46	192	192	338

\*Factories falling in some strata were completely enumerated. These were included in both the sub-samples.

TABLE 9: DISTRIBUTION OF SUB-SAMPLES BY INDUSTRY—ALL INDUSTRIES : 1952

CMI classification		number of samples			
number	description	*common factories	sub-sample-1	sub-sample-2	total
(1)	(2)	(3)	(4)	(5)	(6)
1. 10	soap	20	24	24	28
2. 11	tanning	16	28	28	40
3. 13	glass and glassware	20	35	35	50
4. 17	matches	21	27	27	33
5. 19	woollen textile	14	19	19	24
6. 21	chemicals (including drugs)	31	46	46	61
7. 22b	aluminium, copper and brass : secondary products	25	42	42	59
8. 29a	general engineering and electrical engineering : repairing works	10	20	20	30
9. 29b	general engineering and electrical engineering : manufacturing	24	47	47	70
10. 35	bricks, tiles, lime and surki manufacturing	3	23	23	43
11. 36	lac	4	8	8	12
12. 43	tobacco products	49	101	101	153
13. 44	groundnut decorticating etc.	21	49	49	77
14. 45	printing and bookbinding etc.	6	41	41	76
15. 56	automobiles and coach building	34	65	65	96
16.	other industries	801	1476	1476	2151
17.	all industries	1099	2051	2051	3003

\*Factories falling in some strata were completely enumerated. These were included in both the sub-samples.

# MANUFACTURING INDUSTRIES, 1952

TABLE 10 ESTIMATES OF SELECTED ITEMS BY SUB-SAMPLES IN FACTORIES USING POWER, FOR ALL INDUSTRIES, 1952

item	unit	sub-sample 1	sub-sample 2	combined data	percentage difference
(1)	(2)	(3)	(4)	(5)	(6)
<i>(i) capital investment and rent</i>					
1. value of land	rupees (crores)	37.86	32.25	35.05	16.01
2. value of building	"	210.79	199.83	205.31	5.34
3. value of land and buildings (1+2)	"	248.65	232.08	240.36	6.89
4. value of plant and machinery	"	484.23	409.86	447.05	16.64
5. value of other fixed assets	"	68.96	71.65	70.30	3.83
6. value of total fixed capital (3 to 5)	"	801.84	713.59	757.71	11.65
7. value of raw materials, fuels etc.	"	346.88	336.19	341.53	3.13
8. value of products (finished and semi-finished)	"	294.33	302.27	298.30	2.66
9. cash in hand and at bank	"	80.73	78.75	79.74	2.48
10. total working capital (7 to 9)	"	721.94	717.21	719.57	0.66
11. total (6 + 10)	"	1523.78	1430.80	1477.28	6.29
12. rent etc., paid on total fixed capital	"	3.91	4.35	4.13	10.65
<i>(ii) intensity of work</i>					
13. average number of working days in the year per factory	number	210.74	217.28	214.01	3.00
14. average number of shifts per day per factory	"	1.23	1.23	1.24	0.06
15. average length of shift per factory	hours	7.04	7.23	7.14	2.66
<i>(iii) volume of work</i>					
16. workers employed : men	number (000)	2043.08	2069.07	2056.08	1.26
17. " " : women	"	242.65	255.69	249.17	5.23
18. " " : children	"	6.65	6.65	6.65	0.00
19. " " : total (16 to 18)	"	2292.38	2331.41	2311.90	1.69
20. number of employees other than workers	"	338.36	339.22	338.79	0.25
21. total number of persons employed (19 + 20)	"	2630.74	2670.63	2650.69	1.50
22. total man-hours worked	hours (lakhs)	50563.37	51506.09	51034.71	1.85
23. salaries and wages to workers : men	rupees (lakhs)	20886.81	20725.15	20805.98	0.78
24. " " : women	"	1258.80	1278.42	1268.61	1.55
25. " " : children	"	22.08	21.96	22.02	0.54
26. " " : total (23 to 25)	"	22167.69	22025.53	22096.61	0.64
27. payment to employees through contractors	"	519.19	481.18	500.19	7.60
28. payment to employees other than workers	rupees (lakhs)	6764.47	6399.95	6582.19	5.54
29. value of other benefits (in kind)	"	329.75	353.66	341.71	6.99
30. contribution to provident fund	"	566.04	542.91	554.47	4.16
31. group benefits	"	408.84	410.12	414.49	2.72
32. total payment to all employees (26 to 31)	"	30755.97	30223.35	30489.66	1.75



TABLE 10 (Contd.): ESTIMATES OF SELECTED ITEMS BY SUB-SAMPLES IN FACTORIES  
USING POWER FOR ALL INDUSTRIES : 1952

item	unit	sub- sample 1	sub- sample 2	combined	percentage difference
(1)	(2)	(3)	(4)	(5)	(6)
<i>(iv) input</i>					
33. value of consumption : coke and coal	rupees (crores)	35.48	36.15	35.82	1.87
34. " : petroleum	"	1.30	1.18	1.24	9.68
35. " : electricity	"	18.02	16.79	17.40	7.07
36. " : other fuel and lubricants	"	21.58	17.20	19.39	22.59
37. " : others	"	6.18	6.30	6.24	1.92
38. value of total fuels, lubricants and electricity (33 to 37)	"	82.56	77.62	80.09	6.17
39. value of consumption : basic materials	"	1110.83	1102.90	1106.87	0.72
40. " : chemicals	"	47.31	48.21	47.76	1.88
41. " : packing materials	"	47.33	47.52	47.42	0.40
42. " : other raw materials	"	79.54	75.90	77.72	4.67
43. " : total raw materials (39 to 42)	"	1285.01	1274.53	1279.77	0.82
44. work done for the factories by other concerns	"	9.46	9.55	9.51	0.95
45. value of total input (38+43+44)	"	1377.03	1361.70	1369.37	1.12
<i>(v) output and value added</i>					
46. value of production : major products	"	1828.23	1811.48	1819.86	0.92
47. " : by-products	"	58.48	61.46	59.97	4.97
48. " : subsidiary products	"	2.81	1.96	2.33	32.18
49. " : all products (46 to 48)	"	1889.42	1874.90	1882.16	0.77
50. work done by the factories for other concerns	"	74.83	68.05	71.44	9.49
51. value of total output (49+50)	"	1964.25	1942.96	1953.60	1.09
52. value added (51-45)	"	587.22	581.25	584.23	1.02
53. number of sample factories		1859	1859	2665	

# MANUFACTURING INDUSTRIES : 1952

TABLE 11: ESTIMATES OF SELECTED ITEMS BY SUB-SAMPLES IN FACTORIES NOT  
USING POWER FOR ALL INDUSTRIES : 1952

item	unit	sub- sample 1	sub- sample 2	com- bined	percentage difference
(1)	(2)	(3)	(4)	(5)	(6)
<i>(i) capital investment and rent</i>					
1. value of land	rupees (crores)	2.00	1.83	1.91	8.90
2. value of building	"	5.72	4.91	5.32	15.23
3. value of land and buildings (1+2)	"	7.72	6.74	7.23	13.55
4. value of plant and machinery	"	1.69	2.60	2.14	42.53
5. value of other fixed assets	"	1.95	1.34	1.65	36.97
6. value of total fixed capital (3 to 5)	"	11.36	10.68	11.02	6.17
7. value of raw materials, fuels etc.	"	9.10	10.65	9.87	15.70
8. value of products (finished and semi-finished)	"	7.03	7.84	7.44	10.89
9. cash in hand and at bank	"	2.29	5.49	3.89	82.28
10. total working capital (7 to 9)	"	18.42	23.98	21.20	26.23
11. total (6+10)	"	29.78	34.86	32.22	15.15
12. rent etc., paid on total fixed capital	"	0.20	0.30	0.30	3.33
<i>(ii) intensity of work</i>					
13. average number of working days in the year per factory	number	203.14	206.42	204.82	1.60
14. average number of shifts per day per factory	"	1.00	0.85	0.92	16.30
15. average length of shift per factory	hours	6.68	6.24	6.46	6.81
<i>(iii) volume of work</i>					
16. workers employed : men	number (000)	146.99	138.21	142.80	6.16
17. " " : women	"	117.45	105.82	111.63	10.42
18. " " : children	"	6.27	12.11	14.19	29.32
19. " " : total (16 to 18)	"	280.71	256.14	268.42	9.15
20. number of employees other than workers	"	27.03	21.97	24.50	20.65
21. total number of persons employed (19+20)	"	307.74	278.11	292.92	10.12
22. total man-hours worked	hours (lakhs)	5475.08	5140.31	5307.72	6.31
23. salaries and wages to workers : men	rupees (lakhs)	776.78	734.80	755.86	5.55
24. " " : women	"	319.93	283.21	301.46	12.18
25. " " : children	"	28.08	32.50	30.29	14.55
26. " " : total (23 to 25)	"	1124.79	1050.61	1087.71	6.82
27. payment to employees through contractors	"	208.29	187.12	197.71	10.72
28. payments to employees other than workers	"	264.44	194.24	229.33	32.22
29. value of other benefits (in kind)	"	10.99	10.25	10.61	7.07
30. contribution to provident fund	"	3.24	1.84	2.54	55.51
31. group benefits	"	4.75	9.10	6.91	62.57
32. total payment to all employees (26 to 31)	"	1616.50	1453.16	1534.81	10.85

TABLE 11 (Contd.): ESTIMATES OF SELECTED ITEMS BY SUB-SAMPLES IN FACTORIES NOT USING POWER FOR ALL INDUSTRIES : 1952

item	unit	sub- sample 1	sub- sample 2	combined	percentage difference
(1)	(2)	(3)	(4)	(5)	(6)
<i>(iv) input</i>					
33. value of consumption : coke and coal	rupees (crores)	0.76	0.77	0.76	1.32
34. " : petroleum	"	0.03	0.02	0.03	33.33
35. " : electricity	"	0.05	0.06	0.05	20.00
36. " : other fuel and lubricants	"	0.12	0.11	0.11	9.09
37. " : others	"	0.79	0.50	0.65	44.62
38. value of total fuels, lubricants and electricity (33 to 37)	"	1.75	1.46	1.60	18.12
39. value of consumption : basic materials	"	67.79	84.49	76.14	21.93
40. " : chemicals	"	1.58	1.48	1.53	6.54
41. " : packing materials	"	2.94	3.13	3.04	6.25
42. " : other raw materials	"	1.05	3.57	2.31	109.09
43. " : total raw materials (39 to 42)	"	73.37	92.67	83.02	23.26
44. work done for the factories by other concerns (value)	"	7.66	6.20	6.93	21.07
45. value of total input (38+43+44)	"	82.77	100.33	91.55	19.18
<i>(v) output and value added</i>					
46. value of production : major products	"	104.92	129.21	117.07	20.75
47. " : by-products	"	0.38	0.44	0.41	14.63
48. " : subsidiary products	"	—	—	—	—
49. " : all products (46 to 48)	"	105.30	129.65	117.48	20.73
50. work done by the factories for other concerns	"	2.78	2.78	2.78	0.00
51. value of total output (49+50)	"	108.08	132.43	120.26	20.25
52. value added (51-45))	"	25.31	32.10	28.71	23.65
53. number of sample factories		192	192	338	

# MANUFACTURING INDUSTRIES : 1952

TABLE 12. ESTIMATES OF SELECTED ITEMS BY SUB-SAMPLES IN ALL FACTORIES  
FOR ALL INDUSTRIES : 1952

item	unit	sub- sample 1	sub- sample 2	combined	percentage difference
(1)	(2)	(3)	(4)	(5)	(6)
<i>(i) capital investment and rent</i>					
1. value of land	rupees (crores)	39.86	34.08	37.96	15.64
2. value of building	"	216.51	204.74	210.63	5.59
3. value of land and building (1+2)	"	256.37	238.82	247.59	7.09
4. value of plant and machinery	"	485.92	412.46	449.19	16.35
5. value of other fixed assets	"	70.91	72.99	71.95	2.89
6. value of total fixed capital (3 to 5)	"	813.20	724.27	768.73	11.57
7. value of raw materials, fuels etc.	"	355.98	346.84	351.40	2.69
8. value of products, (finished and semi-finished)	"	301.36	310.11	305.74	2.86
9. cash in hand and at bank	"	83.02	84.24	83.63	1.46
10. total working capital (7 to 9)	"	740.36	741.19	740.77	0.11
11. total (6+10)	"	1553.56	1465.46	1509.50	5.84
12. rent etc., paid on total fixed capital	"	4.20	4.65	4.43	10.16
<i>(ii) intensity of work</i>					
13. average number of working days in the year per factory	number	209.24	215.15	212.21	2.78
14. average number of shifts per day per factory	"	1.18	1.15	1.17	2.56
15. average length of shift per factory	hours	6.97	7.04	7.00	1.00
<i>(iii) volume of work</i>					
16. workers employed : men	number (000)	2190.07	2207.28	2198.68	0.78
17. " " : women	"	360.10	361.51	360.80	0.39
18. " " : children	"	22.92	18.76	20.84	19.96
19. " " : total (16 to 18)	"	2573.09	2587.55	2580.32	0.56
20. number of employees other than workers	"	365.39	361.19	363.29	1.16
21. total number of persons employed (19+20)	"	2938.48	2948.74	2943.61	0.35
22. total man-hours worked	hours (lakhs)	56038.45	56646.40	56342.43	1.08
23. salaries and wages to workers : men	rupees (lakhs)	21663.59	21460.05	21561.84	0.94
24. " " : women	"	1578.73	1561.63	1570.17	1.09
25. " " : children	"	50.16	54.46	52.31	8.22
26. " " : total (23 to 25)	"	23292.48	23076.14	23184.32	0.93
27. payments to employees through contractors	"	727.48	668.30	697.90	8.48
28. payment to employees other than workers	rupees (lakhs)	7028.91	6594.19	6811.52	6.38



TABLE 12 (cont.) ESTIMATES OF SELECTED ITEMS BY SUBSAMPLES IN ALL FACTORIES FOR ALL INDUSTRIES: 1952

item	unit	sub-sample 1	sub-sample 2	combined	percentage differences
(1)	(2)	(3)	(4)	(5)	(6)
29. value of other benefits (in kind)	"	340.74	363.91	352.32	6.57
30. contribution to provident fund	"	569.27	544.75	557.01	4.40
31. group benefits	"	413.59	429.22	421.40	3.71
12. total payment to all employees (26 to 31)	"	32372.47	31676.51	32024.47	2.17
(iv) input					
33. value of consumption : coke and coal	rupees (crores)	36.24	36.92	36.58	1.86
34. " : petroleum	"	1.33	1.20	1.27	10.24
35. " : electricity	"	18.07	16.85	17.45	6.90
36. " : other fuel and lubricants	"	21.70	17.31	19.30	22.51
37. " : others	"	6.97	6.80	6.89	2.47
38. value of total fuels, lubricants and electricity (33 to 37)	"	84.31	79.08	81.69	6.40
39. value of consumption : basic materials	"	1178.62	1187.30	83.01	0.74
40. " : chemicals	"	48.89	49.69	49.29	1.62
41. " : packing materials	"	50.27	50.65	50.46	0.75
42. " : other raw materials	"	80.79	79.47	80.03	1.39
43. " : total raw materials (39 to 42)	"	1358.37	1367.20	1362.79	0.65
44. work done for the factories by other concerns (value)	"	17.12	15.75	16.44	8.33
45. value of total input (38 + 43 + 44)	"	1459.80	1462.03	1460.92	0.15
(v) output and value added					
46. value of production : major products	"	1933.15	1940.69	1936.93	0.39
47. " : by-products	"	58.86	61.90	60.38	5.03
48. " : subsidiary products	"	2.71	1.96	2.33	32.18
49. " : all products (46 to 48)	"	1994.72	2004.55	1999.64	0.49
50. work done by the factories for other concerns	"	77.61	70.83	74.22	9.14
51. value of total output (49 + 50)	"	2072.33	2075.38	2073.86	0.15
52. value added (51 - 45)	"	612.53	613.35	612.94	0.13
53. number of sample factories		2051	2051	3003	

# MANUFACTURING INDUSTRIES 1952

TABLE 14. ESTIMATES OF FIXED CAPITAL IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES 1952

CMI classification		Sample size number of factories			Total fixed capital million of rupees			Ratio of fixed capital to output
number	description	sub- sample 1	sub- sample 2	un- biased	sub- sample 1	sub- sample 2	un- biased	ratio 1952
1	2	3	4	5	6	7	8	9
1. 1	wheat flour	27	27	38	287.00	301.52	293.76	0.39
2. 3	rice milling	116	116	201	1192.12	1011.40	1101.76	1.43
3. 3	biscuit making	11	11	17	426.64	204.40	263.52	0.46
4. 4	fruits and vegetable processing	6	6	8	82.40	189.43	135.92	0.18
5. 5a	sugar vacuum pan factory	81	81	94	2524.15	2023.81	2273.98	1.60
6. 5b	.. : refineries	3	3	4	23.91	33.91	33.91	0.04
7. 5c	.. : gur factories	9	9	16	63.70	92.84	78.27	0.10
8. 6	distilleries and breweries	15	15	20	212.98	335.90	274.44	0.36
9. 7	starch	6	6	10	160.54	31.18	98.96	0.13
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	2430.59	2797.16	2613.89	1.45
11. 9	paints and varnishes	11	11	16	140.59	123.70	137.14	0.18
12. 10	soap	23	23	26	466.40	296.42	395.94	0.52
13. 11	tanning	24	24	32	101.23	112.78	107.03	0.14
14. 12	cement	19	19	19	1239.16	1239.16	1239.16	1.64
15. 13	glass and glassware	28	28	41	654.98	546.68	600.83	0.79
16. 14	ceramics	14	14	17	709.36	406.67	557.51	0.74
17. 15	plywood and tea chests	13	13	17	162.94	166.75	164.74	0.22
18. 16	paper and paper board	40	40	41	1374.88	1380.74	1377.81	1.82
19. 17	matches	24	24	28	182.36	164.48	173.42	0.23
20. 18	cotton textiles : unclassified	7	7	9	415.41	350.17	382.79	0.51
21. 18a	.. : spinning mills	28	28	34	1236.32	1684.77	1460.55	1.93
22. 18b	.. : composite mills	163	163	184	8623.24	7909.26	8266.25	0.91
23. 18c	.. : powerloom mills	12	12	20	409.16	475.64	442.40	0.48
24. 19	woollen textiles	17	17	20	429.41	462.57	395.99	0.52
25. 20	jute textiles	56	56	67	3113.99	3083.86	3095.92	1.00
26. 21	chemicals (including drugs)	42	42	56	3858.62	3937.88	3898.25	5.14
27. 22a	aluminium, copper and brass : primary products	4	4	4	239.92	239.92	239.92	0.32
28. 22b	.. : secondary products	39	39	53	446.93	442.49	444.71	0.59
29. 23a	iron and steel : primary products	7	7	7	3087.71	3087.71	3087.71	4.07
30. 23b	.. : secondary products	57	57	87	1504.81	1467.06	1486.24	1.96
31. 24	bicycles	9	9	11	116.41	115.84	116.12	0.15
32. 25	sewing machines	6	6	6	79.26	79.26	79.26	0.10
33. 27	electric lamps	7	7	7	88.39	88.39	88.39	0.12
34. 28	electric fans	8	8	9	121.79	97.17	109.48	0.14

TABLE 1300011 ESTIMATES OF FIXED CAPITAL IN FACTORIES USING POWER IN INDUSTRIES AND SUB-SAMPLES: 1952

number	CMI classification description	sample size (number of factories)			item : fixed capital unit : lakhs of rupees			percent- age to all indus- tries total
		sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
35. 29	general engineering and electrical engineering : unspecified	11	11	17	278.33	788.29	533.31	0.70
36. 29a	.. .. repairing works	19	19	32	798.24	480.04	639.15	0.84
37. 29b	.. .. manufacturing	46	46	68	2345.32	1450.63	1897.98	2.50
38. 30	footwear and leather manufacturing	12	12	13	110.90	124.03	117.46	0.16
39. 31	rubber and rubber manufacturing	36	36	46	512.90	474.04	493.47	0.65
40. 32	enamelware	3	3	5	32.87	37.66	35.27	0.05
41. 33	hume pipes and other cement and cement concrete products	8	8	11	118.67	124.45	121.56	0.16
42. 34	asbestos and asbestos cement products	5	5	5	32.16	32.16	32.16	0.04
43. 35	bricks, lime, tiles and surki manufacturing	10	10	17	316.10	265.65	290.87	0.38
44. 36	lac	5	5	6	51.70	64.16	57.92	0.08
45. 37	turpentine and rosin	3	3	3	5.79	5.79	5.79	0.01
46. 38	plastics (including gramophone records)	5	5	8	110.81	134.05	122.43	0.16
47. 39	petroleum refining	3	3	3	66.93	66.93	66.93	0.09
48. 40	saw milling	17	17	25	205.39	161.97	183.68	0.24
49. 41	woodware (including furniture)	9	9	16	59.39	83.69	171.54	0.23
50. 42	tea manufacturing	62	62	121	6601.60	7718.99	7160.29	9.45
51. 43	tobacco products	46	46	51	702.67	629.99	666.33	0.88
52. 44	groundnut decorticating etc.	25	25	36	212.36	272.74	242.55	0.32
53. 45	printing and bookbinding etc.	37	37	70	2010.81	1706.66	1858.73	2.45
54. 46	webbing narrow fabrics	5	8	8	84.24	60.79	72.51	0.10
55. 47	hosiery and other knitted goods	7	7	12	200.62	136.00	168.31	0.22
56. 48	thread and thread ball making	2	2	3	67.39	67.39	67.39	0.09
57. 49	textiles dyeing, bleaching etc.	17	17	24	254.17	333.31	293.74	0.39
58. 50	clothing and tailoring	3	3	4	16.42	11.93	13.17	0.02
59. 51	cotton ginning and pressing	89	89	173	1825.10	1404.33	1614.71	2.13
60. 52	rope making	5	5	6	12.31	12.96	12.64	0.02
61. 53	silk and artificial silk	23	23	35	615.35	623.96	619.66	0.82
62. 54	jute pressing	8	8	11	236.28	226.28	231.31	0.31
63. 55	electricity generation and trans-formation	20	20	30	18686.81	11118.79	14902.80	19.68
64. 56	automobiles and coach building	63	63	92	1574.12	1605.41	1589.76	2.10
65. 57	ship building and repairing	12	12	14	473.53	472.32	472.92	0.62
66. 60	aircraft assembling and repairing services	3	3	4	138.84	138.84	138.84	0.18
67. 62	textile machineries and accessories	11	11	14	200.16	256.70	228.43	0.30
68. 63	unspecified industries	139	139	212	5050.25	4977.60	5028.93	6.64
69.	all industries	1859	1859	2665	80183.99	71358.84	75771.40	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 14 ESTIMATES OF WORKING CAPITAL IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size number of factories			mean working capital in lakhs of rupees			per cent to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	284.54	248.96	266.76	0.37
2. 2	rice milling	116	116	201	1278.81	882.80	1080.81	1.50
3. 3	biscuit making	11	11	17	139.02	149.25	144.14	0.20
4. 4	fruits and vegetable processing	6	6	8	20.95	140.69	80.82	0.11
5. 5a	sugar : vacuum pan factory	81	81	94	5647.87	5345.29	5496.58	7.64
6. 5b	„ : refineries	2	2	4	58.97	58.97	58.97	0.08
7. 5c	„ : gur factories	9	9	16	16.94	22.23	19.59	0.03
8. 6	distilleries and breweries	15	15	20	274.35	438.84	356.59	0.50
9. 7	starch	6	6	10	368.26	39.48	203.87	0.28
10. 8	vegetable oils (including hydro- genated oil)	158	158	251	1718.74	2813.57	2266.15	0.15
11. 9	paints and varnishes	11	11	16	338.62	528.01	433.32	0.60
12. 10	soap	23	23	26	670.57	670.65	670.61	0.93
13. 11	tanning	24	24	32	193.43	221.55	207.49	0.29
14. 12	cement	19	19	19	484.84	848.84	848.84	1.18
15. 13	glass and glassware	28	28	41	227.03	235.22	231.12	0.32
16. 14	ceramics	14	14	17	257.84	215.36	236.60	0.33
17. 15	plywood and tea chests	13	13	17	120.50	111.88	116.19	0.16
18. 16	paper and paper board	40	40	41	1029.65	989.54	1009.60	1.40
19. 17	matches	24	24	28	222.62	231.68	227.15	0.32
20. 18	cotton textiles : unclassified	7	7	9	342.75	331.03	336.89	0.47
21. 18a	„ : spinning mills	28	28	34	2034.42	1996.18	2015.30	2.80
22. 18b	„ : composite mills	163	163	184	5989.34	15533.04	15761.19	21.91
23. 18c	„ : powerloom mills	12	12	20	685.74	574.14	629.94	0.88
24. 19	woollen textiles	17	17	20	575.41	793.91	684.66	0.95
25. 20	jute textiles	56	56	67	3743.38	3566.34	3654.86	5.09
26. 21	chemicals (including drugs)	42	42	56	2820.48	2377.00	2598.74	3.61
27. 22a	aluminium, copper and brass : primary products	4	4	4	289.88	289.28	289.28	0.40
28. 22b	„ : secondary products	39	39	53	642.15	670.90	656.53	0.91
29. 23a	iron and steel : primary products	7	7	7	2683.21	2683.21	2683.21	3.73
30. 23b	„ : secondary products	57	57	87	1736.62	1981.80	1859.21	2.58
31. 24	bicycles	9	9	11	95.55	95.83	95.69	0.13
32. 25	sewing machines	6	6	6	75.16	75.16	75.16	0.10
33. 27	electric lamps	7	7	7	53.56	53.56	53.56	0.07
34. 28	electric fans	8	8	9	172.97	173.32	173.14	0.24



TABLE 14 (Contd.): ESTIMATES OF WORKING CAPITAL IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item: working capital unit : lakhs of rupees			percen- tage to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
35. 29	general engineering and electrical engineering : unspecified	11	11	17	558.92	1267.64	913.28	1.27
36. 29a	" " : repairing works	19	19	32	383.60	350.53	367.07	0.51
37. 29b	" " : manufacturing	46	46	68	1970.41	1644.70	1807.56	2.51
38. 30	footwear and leather manufacturing	12	12	13	259.30	296.21	277.76	0.39
39. 31	rubber and rubber manufacturing	36	36	46	849.86	869.16	859.51	1.19
40. 32	enamelware	13	13	5	29.13	28.31	28.72	0.04
41. 33	hume pipes and other cement and cement concrete products	8	8	11	73.84	117.43	95.63	0.13
42. 34	asbestos and asbestos cement products	5	5	5	231.74	231.74	231.74	0.32
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	130.46	140.14	135.30	0.19
44. 36	lac	5	5	6	75.77	72.56	74.06	0.10
45. 37	turpentine and rosin	3	3	3	40.58	40.58	40.58	0.06
46. 38	plastics (including gramophone records)	6	5	8	51.67	108.48	80.07	0.11
47. 39	petroleum refining	3	3	3	85.60	85.60	85.60	0.12
48. 40	saw milling	17	17	25	219.41	306.58	263.00	0.37
49. 41	woodware (including furniture)	9	9	16	33.70	113.36	73.53	0.10
50. 42	tea manufacturing	62	62	121	5355.89	46.2216	4989.03	6.93
51. 43	tobacco products	46	46	51	1194.28	1174.89	1184.58	1.65
52. 44	groundnut decorticating etc.	25	25	36	183.02	1600.95	891.98	1.24
53. 45	printing and bookbinding etc.	37	37	70	2025.77	1383.35	1704.56	2.37
54. 46	webbing narrow fabrics	5	5	8	69.70	39.08	54.39	0.08
55. 47	hosiery and other knitted goods	7	7	12	115.87	202.63	159.25	0.22
56. 48	thread and thread ball making	2	2	3	9.90	9.90	9.90	0.01
57. 49	textiles dyeing, bleaching etc.	17	17	24	226.23	237.23	231.73	0.32
58. 50	clothing and tailoring	3	3	4	68.89	52.78	60.83	0.08
59. 51	cotton ginning and pressing	89	89	173	564.47	434.76	499.61	0.69
60. 52	rope making	5	5	6	52.76	50.08	51.42	0.07
61. 53	silk and artificial silk	23	23	35	676.92	1550.77	1113.85	1.55
62. 54	jute pressing	8	8	11	25.44	23.47	24.45	0.03
63. 55	electricity generation and trans-formation	20	20	30	4479.22	1752.36	3115.79	4.34
64. 56	automobiles and coach building	63	63	92	1813.44	1844.01	1828.72	2.54
65. 57	ship building and repairing	12	12	14	496.42	491.48	493.95	0.69
66. 60	aircraft assembling and repairing services	3	3	4	541.46	541.46	541.46	0.75
67. 62	textile machineries and accessories	11	11	14	123.06	206.92	164.99	0.23
68. 63	unspecified industries	139	139	212	3519.72	4441.80	3980.76	5.54
69.	all industries	1859	1859	2665	72193.82	71720.62	71957.22	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 15. ESTIMATES OF FIXED AND WORKING CAPITAL IN FACTORIES USING  
POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : fixed and working capital unit : lakhs of rupees			percen- tage to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	570.54	550.50	560.52	0.38
2. 2	rice milling	116	116	201	2470.94	1894.20	2182.57	1.48
3. 3	biscuit making	11	11	17	565.65	453.65	509.65	0.35
4. 4	fruits and vegetable processing	6	6	8	103.35	330.13	216.74	0.15
5. 5a	sugar : vacuum pan factory	81	81	94	8172.02	7369.10	7770.56	5.26
6. 5b	" : refineries	3	3	4	92.88	92.88	92.88	0.06
7. 5c	" : gur factories	9	9	16	80.64	115.08	97.86	0.07
8. 6	distilleries and breweries	15	15	20	487.33	774.74	631.03	0.43
9. 7	starch	6	6	10	528.80	70.65	299.72	0.20
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	4149.32	5610.74	4880.03	3.31
11. 9	paints and varnishes	11	11	16	479.21	661.71	570.46	0.39
12. 10	soap	23	23	26	1166.02	967.08	1066.55	0.72
13. 11	tanning	24	24	32	294.71	334.33	314.52	0.21
14. 12	cement	19	19	19	2088.00	2088.00	2088.00	1.41
15. 13	glass and glassware	28	28	41	882.02	781.90	831.96	0.56
16. 14	ceramics	14	14	17	967.20	621.03	794.12	0.54
17. 15	plywood and tea chests	13	13	17	283.44	278.42	280.93	0.19
18. 16	paper and paper board	40	40	41	2404.53	2370.28	2387.40	1.62
19. 17	matches	24	24	28	404.98	396.16	400.57	0.27
20. 18	cotton textiles : unclassified	7	7	9	758.16	681.20	719.68	0.49
21. 18a	" : spinning mills	28	28	34	3270.74	3680.95	3475.85	2.35
22. 18b	" : composite mills	163	163	184	24612.58	23442.30	24027.44	16.23
23. 18c	" : powerloom mills	12	12	20	1094.91	1049.78	1072.34	0.73
24. 19	woollen textiles	17	17	20	904.82	1256.48	1080.65	0.73
25. 20	jute textiles	56	56	67	6857.37	6650.19	6753.78	4.57
26. 21	chemicals (including drugs)	42	42	56	6679.10	6314.89	6469.99	4.40
27. 22a	aluminium, copper and brass : primary products	4	4	4	529.20	529.20	529.20	0.36
28. 22b	" : secondary products	39	39	53	1089.08	1113.39	1101.23	0.75
29. 23a	iron and steel : primary products	7	7	7	5770.92	5770.92	5770.92	3.91
30. 23b	" : secondary products	57	57	87	3241.42	3449.46	3345.44	2.27
31. 24	bicycles	9	9	11	211.96	211.67	211.82	0.14
32. 25	sewing machines	6	6	6	154.43	154.43	154.43	0.10
33. 27	electric lamps	7	7	7	141.95	141.95	141.95	0.10
34. 28	electric fans	8	8	9	295.76	270.50	282.63	0.19

TABLE 15-17 ESTIMATES OF FIXED AND WORKING CAPITAL IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

number	description	sample size (number of factories)			item : fixed and working capital unit : lakhs of rupees			percent to a indus- tries total
		sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
35. 29	general engineering and electrical engineering unspecified	11	11	17	837.25	2055.93	1446.59	0.98
36. 29a	“ : repairing works	19	19	19	1181.84	830.58	1006.21	0.68
37. 29b	“ : manufacturing	46	46	68	4315.73	3095.33	3705.53	2.51
38. 30	footwear and leather manufacturing	12	12	13	370.19	420.24	395.22	0.27
39. 31	rubber and rubber manufacturing	36	36	46	1362.75	1343.20	1352.98	0.92
40. 32	enamelware	3	3	5	62.01	65.97	63.99	0.04
41. 33	hume pipes and other cement and cement concrete products	8	8	11	192.51	241.88	217.20	0.15
42. 34	asbestos and asbestos cement products	5	5	5	263.90	263.90	263.90	0.18
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	446.56	405.79	426.18	0.29
44. 36	lac	5	5	6	127.26	136.71	131.99	0.09
45. 37	turpentine and rosin	3	3	3	46.37	46.37	46.37	0.03
46. 38	plastics (including gramophone records)	3	5	8	162.48	242.52	202.50	0.14
47. 39	petroleum refining	3	3	3	152.52	152.52	152.52	0.10
48. 40	saw milling	17	17	25	424.80	468.56	446.68	0.30
49. 41	woodware (including furniture)	9	9	16	93.09	397.04	245.07	0.17
50. 42	tea manufacturing	62	61	121	11957.49	12341.15	12149.32	8.23
51. 43	tobacco products	46	46	51	1896.95	1804.87	1850.91	1.25
52. 44	groundnut decorticating etc.	25	25	36	395.38	1873.68	1134.53	0.77
53. 45	printing and bookbinding etc.	37	37	70	4036.59	3090.01	3563.30	2.41
54. 46	webbing narrow fabrics	5	5	8	153.93	99.87	126.90	0.09
55. 47	hosiery and other knitted goods	7	7	12	316.49	338.63	327.56	0.22
56. 48	thread and thread ball making	2	2	3	77.29	77.29	77.29	0.25
57. 49	textiles dyeing, bleaching etc.	17	17	24	480.40	570.54	525.47	0.36
58. 50	clothing and tailoring	3	3	4	85.31	64.70	75.01	0.05
59. 51	cotton ginning and pressing	89	89	173	2389.56	1839.08	2114.33	1.43
60. 52	rope making	5	5	6	65.07	63.03	64.05	0.04
61. 53	silk and artificial silk	23	23	35	1292.27	2174.74	1733.50	1.17
62. 54	jute pressing	8	8	11	261.78	249.74	255.76	0.17
63. 55	electricity generation and transformation	20	20	30	23166.03	12871.15	18018.59	2.20
64. 56	automobiles and coach building	63	63	92	3387.56	3449.42	3418.49	2.31
65. 57	ship building and repairing	12	12	14	969.95	963.80	966.87	0.65
66. 60	aircraft assembling and repairing services	3	3	4	680.31	680.31	680.31	0.46
67. 62	textile machineries and accessories	11	11	14	323.22	463.62	393.42	0.27
68. 63	unspecified industries	139	139	212	8599.97	9419.40	9009.68	6.10
69.	all industries	1859	1859	2665	152377.78	143079.47	147728.64	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 16. ESTIMATES OF THE NUMBER OF WORKING DAYS DURING THE YEAR IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES. 1952

number		description	item : number of working days						percentage to all units from total
			primary products			secondary products			
			sample 1	sample 2	estimated	sample 1	sample 2	estimated	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1.	1	wheat flour	27	27	26	221	212	246	0.70
2.	2	rice milling	116	116	201	2,796	2,643	2,720	7.60
3.	3	biscuit making	11	11	17	407	401	404	0.81
4.	4	fruits and vegetable processing	6	6	8	63	77	70	0.14
5.	5a	sugar : vacuum pan factory	81	81	94	173	232	202	0.41
6.	5b	„ : refineries	3	3	4	36	36	36	0.07
7.	5c	„ : gur factories	9	9	16	241	472	406	0.82
8.	6	distilleries and breweries	15	15	20	96	222	159	0.32
9.	7	starch	6	6	10	169	96	132	0.27
10.	8	vegetable oil (including hydrogenated oil)	158	158	251	2,789	3,109	2,949	5.93
11.	9	paints and varnishes	11	11	16	252	255	254	0.15
12.	10	soap	23	23	26	224	127	175	0.35
13.	11	tanning	24	24	32	325	420	373	0.75
14.	12	cement	19	19	19	67	67	67	0.13
15.	13	glass and glassware	28	28	41	385	350	368	0.74
16.	14	ceramics	14	14	17	148	194	171	0.34
17.	15	plywood and tea chest	13	13	17	201	182	192	0.39
18.	16	paper and paper board	40	40	41	179	183	181	0.36
19.	17	matches	24	24	28	96	128	112	0.23
20.	18	cotton textiles : unclassified	7	7	9	47	41	44	0.09
21.	18a	„ : spinning mills	28	28	34	329	310	320	0.64
22.	18b	„ : composite mills	163	163	184	816	782	799	1.61
23.	18c	„ : powerloom mills	12	12	20	1,150	1,144	1,147	2.31
24.	19	woollen textiles	17	17	20	210	210	210	0.42
25.	20	jute textiles	56	56	67	275	262	268	0.54
26.	21	chemicals (including drugs)	42	42	56	992	979	986	1.99
27.	22a	aluminium, copper and brass : primary products	4	4	4	14	14	14	0.03
28.	22b	„ : secondary products	39	39	53	1,001	575	788	1.49
29.	23a	iron and steel : primary products	7	7	7	24	24	24	0.05
30.	23b	„ : secondary products	57	57	87	2,714	2,954	2,834	5.71
31.	24	bicycles	9	9	11	116	110	113	0.23
32.	25	sewing machines	6	6	6	18	18	18	0.04
33.	27	electric lamps	7	7	7	21	21	21	0.04



TABLE 16 *Contd.* ESTIMATES OF THE NUMBER OF WORKING DAYS DURING THE YEAR IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item: number of working days during the year unit: days (00)			percentage to all industries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	96	94	95	0.19
35. 29	general engineering and electrical engineering : unclassified	11	11	17	592	585	588	1.18
36. 29a	„ „ : repairing works	19	11	17	592	585	588	1.18
37. 29b	„ „ : manufacturing	46	46	68	2,322	2,584	2,453	4.94
38. 30	footwear and leather manufacturing	12	12	13	101	31	66	0.13
39. 31	rubber and rubber manufacturing	36	36	46	376	386	381	0.77
40. 32	enamelware	3	3	5	61	61	61	0.12
41. 33	hume pipes and other cement and cement concrete products	8	8	11	132	242	187	0.38
42. 34	asbestos and asbestos cement products	5	5	5	13	13	13	0.03
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	836	804	820	1.65
44. 36	lac	5	5	6	36	44	40	0.08
45. 37	turpentine and rosin	3	3	3	6	6	6	0.01
46. 38	plastics (including gramophone records)	5	5	8	212	77	145	0.29
47. 39	petroleum refining	3	3	3	7	7	7	0.01
48. 40	saw milling	17	17	25	1,182	1,058	1,120	2.26
49. 41	woodware (including furniture)	9	9	16	310	216	263	0.53
50. 42	tea manufacturing	62	62	121	2,908	2,906	2,907	5.86
51. 43	tobacco products	46	46	51	148	247	198	0.40
52. 44	groundnut decorticating etc.	25	25	36	662	808	735	1.48
53. 45	printing and bookbinding etc.	37	37	70	4,195	4,707	4,451	8.96
54. 46	webbing narrow fabrics	5	5	8	246	215	230	0.46
55. 47	hosiery and other knitted goods	7	7	12	741	978	859	1.73
56. 48	thread and thread ball making	2	2	3	37	37	37	0.07
57. 49	textiles dyeing, bleaching etc.	17	17	24	227	528	378	0.76
58. 50	clothing and tailoring	3	3	4	79	6	42	0.08
59. 51	cotton ginning and pressing	89	89	173	1,998	1,854	1,926	3.88
60. 52	rope making	5	5	6	25	24	24	0.05
61. 53	silk and artificial silk	233	23	35	1,584	1,558	1,571	3.16
62. 54	jute pressing	8	8	11	63	47	55	0.11
63. 55	electricity generation and trans- formation	20	20	30	1,209	1,229	1,229	2.47
64. 56	automobiles and coach building	63	63	92	2,150	2,002	2,076	4.18
65. 57	ship building and repairing	12	12	14	126	125	125	0.25
66. 60	aircraft assembling and repairing services	3	3	4	42	42	42	0.08
67. 62	textile machineries and accessories	11	11	14	482	496	489	0.98
68. 63	unspecified industries	139	139	212	6,072	6,779	6,426	12.95
69.	all industries	1,859	1,859	2,665	58,899	50,418	49,659	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 17 : ESTIMATES OF MAN HOURS WORKED DURING THE YEAR IN FACTORIES  
USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : man-hours worked during the year unit : hours in lakhs			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	116.71	102.85	109.78	0.22
2. 2	rice milling	116	116	201	574.48	626.34	600.41	1.18
3. 3	biscuit making	11	11	17	178.37	143.24	160.80	0.32
4. 4	fruits and vegetable processing	6	6	8	13.60	68.68	41.14	0.08
5. 5a	sugar : vacuum pan factory	81	81	94	1367.88	1357.50	1362.69	2.67
6. 5b	„ : refineries	3	3	4	29.68	29.68	29.68	0.06
7. 5c	„ : gur factories	9	9	16	58.12	86.49	72.31	0.14
8. 6	distilleries and breweries	15	15	20	120.26	155.31	137.78	0.27
9. 7	starch	6	6	10	66.73	21.40	44.07	0.09
10. 8	vegetable oils (including hydro- genated oil)	158	158	251	829.04	1096.76	962.89	1.89
11. 9	paints and varnishes	11	11	16	100.63	106.92	103.78	0.20
12. 10	soap	23	23	26	215.43	173.33	194.38	0.38
13. 11	tanning	24	24	32	143.48	168.43	155.96	0.31
14. 12	cement	19	19	19	319.06	319.06	319.06	0.63
15. 13	glass and glassware	28	28	41	445.14	727.51	586.33	1.15
16. 14	ceramics	14	14	17	397.25	441.75	419.50	0.82
17. 15	plywood and tea chest	13	13	17	119.60	146.47	133.03	0.26
18. 16	paper and paper board	40	40	41	881.48	893.52	887.50	1.73
19. 17	matches	24	24	28	253.15	274.26	263.70	0.52
20. 18	cotton textiles : unclassified	7	7	9	503.67	439.28	471.48	0.92
21. 18a	„ : spinning mills	28	28	34	1872.39	2177.86	2025.12	3.96
22. 18b	„ : composite mills	163	163	184	14647.30	14004.47	14325.88	28.06
23. 18c	„ : powerloom mills	12	12	20	744.13	510.04	627.08	1.23
24. 19	woollen textiles	17	17	20	301.39	584.08	442.73	0.87
25. 20	jute textiles	56	56	67	6071.85	6298.56	6185.21	2.11
26. 21	chemicals (including drugs)	42	42	56	1102.18	1092.08	1097.13	2.15
27. 22a	aluminium, copper and brass :							
	primary products	4	4	4	79.24	79.24	79.24	0.16
28. 22b	„ : secondary products	39	39	53	302.84	420.19	361.51	0.71
29. 23a	iron and steel : primary products	7	7	7	1248.35	1248.35	1248.35	2.44
30. 23b	„ : secondary products	57	57	87	1378.35	1456.57	1417.46	2.77
31. 24	bicycles	9	9	11	56.68	51.22	53.95	0.11
32. 25	sewing machines	6	6	6	45.86	45.86	45.86	0.09
33. 27	electric lamps	7	7	7	26.35	26.35	26.35	0.05

TABLE 17 (Contd.): ESTIMATES OF MAN-HOURS WORKED DURING THE YEAR IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES: 1952

CMI classification		sample size (number of factories)			item : man-hours worked during the year unit : hours in lakhs			percen- tage to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	88.28	84.40	86.34	0.17
35. 29	general engineering and electrical engineering : unspecified	11	11	17	466.13	743.90	605.02	1.19
36. 29a	" " : repairing works	19	19	32	537.04	589.03	563.03	1.11
37. 29b	" " : manufacturing	46	46	68	813.91	1015.83	914.87	1.79
38. 30	footwear and leather manufacturing	12	12	13	248.89	243.86	246.38	0.48
39. 31	rubber and rubber manufacturing	36	36	46	302.36	339.77	321.06	0.63
40. 32	enamelware	3	3	5	60.04	60.96	60.50	0.12
41. 33	hume pipes and other cement and cement concrete products	7	8	11	66.19	86.67	76.43	0.15
42. 34	asbestos and asbestos cement pro- ducts	5	5	5	66.72	66.72	66.72	0.13
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	439.18	304.54	371.86	0.73
44. 36	lac	5	5	6	33.97	35.18	34.58	0.07
45. 37	turpentine and rosin	3	3	3	7.25	7.25	7.25	0.01
46. 38	plastics (including gramophone records)	5	5	8	90.00	67.31	78.66	0.16
47. 39	petroleum refining	3	3	3	48.94	48.94	48.94	0.10
48. 40	saw milling	17	17	25	217.49	185.67	201.58	0.39
49. 41	woodware (including furniture)	9	9	16	79.99	107.62	93.80	0.18
50. 42	tea manufacturing	62	62	121	1943.66	1821.47	1882.56	3.69
51. 43	tobacco products	46	46	51	466.90	478.31	472.61	0.93
52. 44	groundnut decortating etc.	25	25	36	361.55	243.48	302.52	0.69
53. 45	printing and bookbinding etc.	37	37	70	1580.24	1727.47	1653.85	3.24
54. 46	webbing narrow fabrics	5	5	8	79.46	64.44	71.95	0.14
55. 47	hosiery and other knitted goods	7	7	12	156.57	226.80	191.68	0.38
56. 48	thread and thread ball making	2	2	3	13.85	13.85	13.85	0.03
57. 49	textiles dyeing, bleaching etc.	17	17	24	274.66	257.36	266.01	0.52
58. 50	clothing and tailoring	3	3	4	32.48	20.84	26.66	0.05
59. 51	cotton ginning and pressing	89	89	173	542.36	613.96	578.66	1.13
60. 52	rope making	5	5	6	30.57	30.64	30.61	0.08
61. 53	silk and artificial silk	23	23	35	966.20	899.12	932.66	1.83
62. 54	jute pressing	8	8	11	17.42	10.82	14.12	0.03
63. 55	electricity generation and trans- formation	20	20	30	1015.44	699.86	857.65	1.68
64. 56	automobiles and coach building	63	63	92	792.10	698.70	745.40	1.46
65. 57	ship building and repairing	12	12	14	376.31	378.05	377.18	0.74
66. 60	aircraft assembling and repairing services	3	3	4	99.82	99.82	99.82	0.20
67. 62	textile machineries and accessories	11	11	14	148.41	242.07	195.44	03.8
68. 63	unspecified industries	139	139	212	3487.32	3617.73	3552.52	6.96
69.	all industries	1859	1859	2665	50563.37	51506.09	51034.71	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 18 : ESTIMATES OF WORKERS DIRECTLY EMPLOYED PER WORKING DAY IN  
FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : number of workers per working day unit : number (00)			percen- tage to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	53.95	51.63	52.79	0.23
2. 2	rice milling	116	116	201	411.93	493.71	452.82	1.96
3. 3	biscuit making	11	11	17	73.44	60.76	67.10	0.29
4. 4	fruits and vegetable processing	6	6	8	8.37	33.93	21.15	0.09
5. 5a	sugar : vacuum pan factory	81	81	94	885.55	878.77	882.16	3.82
6. 5b	„ : refineries	3	3	4	20.39	20.39	20.39	0.09
7. 5c	sugar : gur factories	9	9	16	76.62	99.36	87.99	0.38
8. 6	distilleries and breweries	15	15	20	56.55	65.95	61.25	0.26
9. 7	starch	6	6	10	45.66	15.76	30.71	0.13
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	461.16	578.88	520.03	2.25
11. 9	paints and varnishes	11	11	16	41.78	43.96	42.87	0.19
12. 10	soap	23	23	26	90.96	73.70	82.33	0.36
13. 11	tanning	24	24	32	70.82	73.10	71.96	0.31
14. 12	cement	19	19	19	111.68	111.68	111.68	0.48
15. 13	glass and glassware	28	28	41	223.47	346.33	284.90	1.23
16. 14	ceramics	14	14	17	162.58	173.30	167.94	0.73
17. 15	plywood and tea chests	13	13	17	49.31	69.79	59.55	0.26
18. 16	paper and paper board	40	40	41	213.25	217.33	215.29	0.93
19. 17	matches	24	24	28	112.78	125.10	118.94	0.51
20. 18	cotton textiles : unclassified	7	7	9	188.35	200.89	194.62	0.84
21. 18a	„ : spinning mills	28	28	34	838.89	905.05	871.97	3.77
22. 18b	„ : composite mills	163	163	184	6195.59	5910.35	6052.98	26.17
23. 18c	„ : powerloom mills	12	12	20	311.86	220.42	266.14	1.15
24. 19	woollen textiles	17	17	20	128.28	243.52	185.90	0.80
25. 20	jute textiles	56	56	67	2758.52	2849.10	2803.81	12.13
26. 21	chemicals (including drugs)	42	42	56	388.57	393.79	391.18	1.69
27. 22a	aluminium, copper and brass : primary products	4	4	4	29.50	29.50	29.50	0.13
28. 22b	„ : secondary products	39	39	53	128.23	137.71	132.97	0.58
29. 23a	iron and steel : primary products	7	7	7	463.33	463.33	463.33	2.00
30. 23b	„ : secondary products	57	57	87	606.43	617.87	612.15	2.65
31. 24	bicycles	9	9	11	24.98	22.74	23.86	0.10
32. 25	sewing machines	6	6	6	19.78	19.78	19.78	0.09
33. 27	electric lamps	7	7	7	11.28	11.28	11.28	0.05



TABLE 18. ESTIMATES OF WORKERS DIRECTLY EMPLOYED PER WORKING DAY IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLE : 1952

number	CMI classification description	sample size (number of factories)			item : number of workers per working day unit : number (00)			percentage to all industries total
		sub-sample 1	sub-sample 2	com- bined	sub-sample 1	sub-sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 25	electric fans	8	8	9	38.30	36.62	37.46	0.16
35. 29	general engineering and electrical engineering : unspecified	11	11	17	198.44	310.58	254.51	1.10
36. 29a	" " : repairing works	19	19	32	234.28	247.66	240.97	1.04
37. 29b	" " : manufacturing	46	46	68	343.74	434.04	388.89	1.68
38. 30	footwear and leather manufacturing	12	12	13	108.15	105.99	107.07	0.46
39. 31	rubber and rubber manufacturing	36	36	46	141.22	163.00	152.11	0.66
40. 32	enamelware	3	3	5	24.38	24.74	24.56	0.11
41. 33	hume pipes and other cement and cement concrete products	8	8	11	32.73	35.33	34.03	0.15
42. 34	asbestos and asbestos cement products	5	5	5	30.05	30.05	30.05	0.13
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	192.32	134.88	163.60	0.71
44. 36	lac	5	5	6	15.25	16.21	15.73	0.07
45. 37	turpentine and rosin	3	3	3	2.96	2.96	2.96	0.01
46. 38	plastics (including gramophone records)	5	5	8	41.75	29.87	35.81	0.15
47. 39	petroleum refining	3	3	3	16.76	16.76	16.76	0.07
48. 40	saw milling	17	17	25	123.18	96.72	109.95	0.48
49. 41	woodware (including furniture)	9	9	16	35.99	45.75	40.87	0.18
50. 42	tea manufacturing	62	62	121	958.97	941.39	950.18	4.11
51. 43	tobacco products	46	46	51	281.74	274.04	277.90	1.20
52. 44	groundnut decorticating etc.	25	25	36	216.72	155.70	186.21	0.81
53. 45	printing and bookbinding etc.	37	37	70	698.39	679.97	689.18	2.98
54. 46	webbing narrow fabrics	5	5	8	32.55	27.11	29.83	0.13
55. 47	hosiery and other knitted goods	7	7	12	68.05	93.47	80.76	0.35
56. 48	thread and thread ball making	2	2	3	4.68	4.68	4.68	0.02
57. 49	textiles dyeing, bleaching etc.	17	17	24	116.60	106.94	111.77	0.48
58. 50	clothing and tailoring	3	3	4	13.87	9.07	11.47	0.05
59. 51	cotton ginning and pressing	89	89	173	703.44	712.24	707.84	3.06
60. 52	rope making	5	5	6	18.81	17.57	18.19	0.08
61. 53	silk and artificial silk	23	23	35	427.23	379.63	403.43	1.74
62. 54	jute pressing	8	8	11	9.62	7.18	8.40	0.04
63. 55	electricity generation and transformation	20	20	30	410.71	304.59	357.65	1.55
64. 56	automobiles and coach building	63	63	92	339.35	303.09	321.22	1.39
65. 57	ship building and repairing	12	12	14	172.08	173.28	172.68	0.75
66. 60	aircraft assembling and repairing services	3	3	4	61.74	61.74	61.74	0.27
67. 62	textile machineries and accessories	11	11	14	61.42	99.28	80.35	0.35
68. 63	unspecified industries	139	139	212	1484.53	1673.25	1578.89	6.83
69.	all industries	1859	1859	2665	22923.84	23314.14	23119.02	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 10. ESTIMATES OF PERSONS EMPLOYED IN MANUFACTURING INDUSTRIES USING POWER BY INDUSTRIES AND SUB-SAMPLES, 1952

number	description	sub-sample			sub-sample			combined
		1	2	combined	1	2	combined	
1	1 wheat flour	27	27	38	13.55	13.35	13.35	0.40
2	2 rice milling	116	116	201	101.73	133.36	117.54	3.47
3	3 biscuit making	1	11	17	27.57	24.03	25.80	0.76
4	4 fruits and vegetable processing	6	6	8	3.06	3.72	3.39	0.10
5	5a sugar : vacuum pan factory	81	81	94	245.27	276.65	262.46	7.75
6	5b " : refineries	3	3	4	4.74	4.74	4.74	0.14
7	5c " : gur-factories	9	8	16	2.44	14.56	8.30	0.25
8	6 distilleries and breweries	15	15	20	15.25	19.61	17.43	0.51
9	7 starch	6	6	10	8.72	1.36	5.0	0.15
10	8 vegetable oil (including hydrogenated oil)	158	158	251	111.77	126.27	119.03	3.51
11	9 paints and varnishes	11	11	16	12.07	13.45	12.76	0.38
12	10 soap	23	23	26	32.84	12.00	22.42	0.66
13	11 tanning	24	24	32	11.62	11.45	11.53	0.34
14	12 cement	19	19	19	29.21	29.21	29.21	0.86
15	13 glass and glassware	28	28	41	21.98	29.66	25.82	0.76
16	14 ceramics	14	14	17	24.53	26.01	25.77	0.76
17	15 plywood and tea chests	13	13	17	16.51	11.67	14.09	0.42
18	16 paper and paper board	40	40	41	39.39	39.15	39.27	1.16
19	17 matches	24	24	28	19.32	15.56	17.44	0.51
20	18 cotton textiles : unclassified	7	7	9	14.99	15.17	15.08	0.45
21	18a " " : spinning mills	28	28	34	51.73	62.99	57.36	1.69
22	18b " " : composite mills	163	163	184	386.81	387.73	387.27	1.42
23	18c " " : powerloom mills	12	12	20	23.84	23.36	23.60	0.70
24	19 woollen textiles	17	17	20	16.42	28.22	22.32	0.66
25	20 jute textiles	56	56	67	228.63	150.87	189.75	5.60
26	21 chemicals (including drugs)	42	42	56	103.08	129.74	116.41	3.44
27	22a aluminium, copper and brass :							
	primary products	4	4	4	9.92	9.92	9.92	0.29
28	22b " " : secondary products	39	39	53	31.27	24.81	28.04	0.83
29	23a iron and steel : primary products	7	7	7	112.93	112.92	112.92	3.33
30	23b " " : secondary products	57	57	87	97.51	110.09	103.80	3.06
31	24 bicycles	9	9	11	5.05	5.21	5.13	0.15
32	25 sewing machines	6	6	6	2.65	2.65	2.65	0.08

TABLE 19 (Contd.). ESTIMATES OF PERSONS OTHER THAN WORKERS PER WORKING DAY IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

number	CMI classification description	sample size (number of factories)			item : number of persons other than workers per working day unit : number (00)			percentage to all industries total
		sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
33. 27	electric lamps	7	7	7	2.66	2.66	2.66	0.08
34. 28	electric fans	8	8	9	12.18	10.74	11.46	0.34
35. 29	general engineering and electrical engineering : unspecified	11	11	17	37.20	64.38	50.79	1.50
36. 29a	„ : repairing works	19	19	32	39.04	35.44	37.24	1.10
37. 29b	„ : manufacturing	46	46	68	71.87	81.57	76.72	2.26
38. 30	footwear and leather manufacturing	12	12	13	18.74	19.22	18.98	0.58
39. 31	rubber and rubber manufacturing	36	36	36	32.26	33.84	33.05	0.90
40. 32	enamelware	3	3	5	3.30	3.66	3.46	0.70
41. 33	hume pipes and other cement and cement concrete products	8	8	11	5.86	6.48	6.17	0.18
42. 34	asbestos and asbestos cement products	5	5	5	1.20	1.20	1.20	0.40
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	28.66	24.62	26.64	0.79
44. 36	lac	5	5	6	2.98	3.10	3.04	0.09
45. 37	turpentine and rosin	3	3	3	1.25	1.25	1.25	0.04
46. 38	plastics (including gramophone records)	5	5	8	11.71	6.31	9.01	0.27
47. 39	petroleum refining	3	3	3	3.28	3.28	3.28	0.10
48. 40	saw milling	17	17	25	18.14	28.28	23.21	0.69
49. 41	woodware (including furniture)	9	9	16	3.95	10.35	7.15	0.21
50. 42	tea manufacturing	62	62	121	78.00	86.88	82.44	2.43
51. 43	tobacco products	46	46	51	27.90	26.32	27.11	0.80
52. 44	groundnut decorticating etc.	25	25	36	30.20	21.22	25.71	0.76
53. 45	printing and bookbinding etc.	37	37	70	163.29	161.93	162.61	4.80
54. 46	webbing narrow fabrics	5	5	8	3.52	3.28	3.40	0.10
55. 47	hosiery and other knitted goods	7	7	12	6.91	14.75	10.83	0.32
56. 48	thread and thread ball making	2	2	3	1.44	1.44	1.44	0.04
57. 49	textiles dyeing, bleaching etc.	17	17	24	13.02	14.42	13.72	0.40
58. 50	clothing and tailoring	3	3	4	2.35	1.39	1.87	0.06
59. 51	cotton ginning and pressing	89	89	173	182.56	217.56	199.78	5.90
60. 52	rope making	5	5	6	1.87	1.67	1.77	0.05
61. 53	silk and artificial silk	23	23	35	32.53	34.08	33.30	0.98
62. 54	jute pressing	8	8	11	3.67	3.91	3.79	0.11
63. 55	electricity generation and transformation	20	20	30	274.50	158.54	216.52	6.39
64. 56	automobiles and coach building	63	63	92	130.07	103.01	116.54	3.44
65. 57	ship building and repairing	12	12	14	30.97	31.93	31.45	0.93
66. 60	aircraft assembling and repairing services	3	3	4	48.55	48.55	48.55	1.43
67. 62	textile machineries and accessories	11	11	14	6.82	14.56	10.69	0.32
68. 63	unspecified industries	139	139	212	221.36	240.82	231.09	6.82
69.	all industries	1859	1859	2665	3383.61	3392.16	3387.87	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 20 : ESTIMATES OF EMPLOYEES PER WORKING DAY IN FACTORIES USING  
POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : total number of employees per working day unit : number (00)			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	67.50	64.98	66.24	0.25
2. 2	rice milling	116	116	201	513.65	627.07	570.36	2.15
3. 3	biscuit making	11	11	17	101.01	84.79	92.90	0.35
4. 4	fruits and vegetable processing	6	6	8	11.43	37.65	24.54	0.09
5. 5a	sugar : vacuum pan factory	81	81	94	1133.82	1155.42	1144.62	4.32
6. 5b	„ : refineries	3	3	4	25.13	25.13	25.13	0.09
7. 5c	sugar : gur factories	9	9	16	79.06	113.92	96.49	0.36
8. 6	distilleries and breweries	15	15	20	71.80	85.56	78.68	0.30
9. 7	starch	6	6	10	54.38	17.12	35.75	0.13
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	572.93	705.15	639.05	2.41
11. 9	paints and varnishes	11	11	16	53.85	57.41	55.63	0.21
12. 10	soap	23	23	26	123.80	85.70	104.75	0.40
13. 11	tanning	24	24	32	82.43	84.55	83.49	0.31
14. 12	cement	19	19	19	140.89	140.89	140.89	0.53
15. 13	glass and glassware	28	28	41	245.45	375.99	310.72	1.17
16. 14	ceramics	14	14	17	188.11	199.31	193.71	0.73
17. 15	plywood and tea chests	13	13	17	65.82	81.46	73.64	0.28
18. 16	paper and paper board	40	40	41	252.64	256.48	254.56	0.96
19. 17	matches	24	24	28	132.10	140.66	136.38	0.51
20. 18	cotton textiles : unclassified	7	7	9	203.34	216.06	209.70	0.79
21. 18a	„ „ : spinning mills	28	28	34	890.62	968.04	929.33	3.51
22. 18b	„ „ : composite mills	163	163	184	6582.40	6298.08	6440.25	24.30
23. 18c	„ „ : powerloom mills	12	12	20	335.70	243.78	289.74	1.09
24. 19	woollen textiles	17	17	20	144.70	271.74	208.22	0.79
25. 20	jute textiles	56	56	67	2987.15	2999.97	2993.56	11.29
26. 21	chemicals (including drugs)	42	42	56	491.65	523.53	507.59	1.91
27. 22a	aluminium, copper and brass : primary products	4	4	4	39.42	39.42	39.42	0.15
28. 22b	„ : secondary products	39	39	53	149.50	162.52	161.01	0.61
29. 23a	iron and steel : primary products	7	7	7	576.25	576.25	576.25	2.17
30. 23b	„ „ : secondary products	57	57	87	703.94	727.96	715.95	2.70
31. 24	bicycles	9	9	11	30.03	27.95	28.99	0.11
32. 25	sewing machines	6	6	6	22.43	22.43	22.43	0.08
33. 27	electric lamps	7	7	7	13.94	13.94	13.94	0.05



TABLE 29 (Contd.). ESTIMATES OF EMPLOYEES PER WORKING DAY IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : total number of employees per working day unit : number (00)			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	50.48	47.36	48.92	0.18
35. 29	general engineering and electrical engineering : unspecified	11	11	17	235.64	374.96	305.30	1.05
36. 29a	„ : repairing works	19	19	32	273.32	283.10	278.21	1.05
37. 29b	„ : manufacturing	46	46	68	415.61	515.61	465.61	1.76
38. 30	footwear and leather manufacturing	12	12	13	126.89	125.21	126.05	0.48
39. 31	rubber and rubber manufacturing	36	36	46	173.48	196.84	185.16	0.70
40. 32	enamelware	3	3	5	27.68	28.40	28.04	0.11
41. 33	hume pipes and other cement and cement concrete products	8	8	11	38.59	41.81	40.20	0.15
42. 34	asbestos and asbestos cement products	4	5	5	31.25	31.25	31.25	0.12
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	220.98	159.50	190.24	0.72
44. 36	lac	5	5	6	17.23	19.31	18.77	0.07
45. 37	turpentine and rosin	3	3	3	4.21	4.21	4.21	0.02
46. 38	plastics (including gramophone records)	5	4	8	53.46	36.18	44.82	0.17
47. 39	petroleum refining	3	3	3	20.04	20.04	20.04	0.08
48. 40	saw milling	17	17	25	141.32	125.00	133.16	0.50
49. 41	woodware (including furniture)	9	9	16	39.94	56.10	48.02	0.18
50. 42	tea manufacturing	62	62	121	1036.97	1028.27	1032.62	3.90
51. 43	tobacco products	46	46	51	309.64	300.36	305.01	1.15
52. 44	groundnut decorticating etc.	25	25	36	246.92	176.92	211.92	0.80
53. 45	printing and bookbinding etc.	37	37	70	861.68	841.90	851.78	3.21
54. 46	webbing narrow fabrics	5	5	8	36.07	30.39	33.23	0.13
55. 47	hosiery and other knitted goods	7	7	12	74.96	108.22	91.59	0.35
56. 48	thread and thread ball making	2	2	3	6.12	6.12	6.12	0.02
57. 49	textiles dyeing, bleaching etc.	17	17	24	129.62	121.36	125.49	0.47
58. 50	clothing and tailoring	3	3	4	16.22	10.46	13.34	0.05
59. 51	cotton ginning and pressing	89	89	173	885.44	929.80	907.62	3.42
60. 52	rope making	5	5	6	20.68	19.24	19.96	0.08
61. 53	silk and artificial silk	23	23	35	459.75	413.71	436.73	1.65
62. 54	jute pressing	8	8	11	13.29	11.09	12.19	0.05
63. 55	electricity generation and transformation	20	20	30	685.21	463.13	574.17	2.17
64. 56	automobiles and coach building	63	63	92	469.42	406.10	437.76	1.65
65. 57	ship building and repairing	12	12	14	203.04	205.21	204.13	0.77
66. 60	aircraft assembling and repairing services	3	3	4	110.29	110.29	110.29	0.42
67. 62	textile machineries and accessories	11	11	14	68.24	113.84	91.04	0.34
68. 63	unspecified industries	139	139	212	1705.89	1914.07	1809.98	6.83
69.	all industries	1859	1859	2665	26307.45	26706.27	26506.89	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 21: ESTIMATES OF SALARIES AND WAGES RECEIVED BY DIRECTLY EMPLOYED WORKERS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of total salaries and wages received by workers unit : lakhs of rupees			percentage to all industries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	45.88	41.41	43.65	0.20
2. 2	rice milling	116	116	201	112.53	105.96	109.25	0.49
3. 3	biscuit making	11	11	17	50.24	42.27	46.25	0.21
4. 4	fruits and vegetable processing	6	6	8	2.82	12.75	7.79	0.04
5. 5a	sugar : vacuum pan factory	81	81	94	536.82	551.82	544.32	2.46
6. 5b	„ : refineries	3	3	4	9.77	9.77	9.77	0.04
7. 5c	„ : gur factories	9	9	16	11.63	19.70	15.66	0.07
8. 6	distilleries and breweries	15	15	20	40.46	61.56	51.01	0.23
9. 7	starch	6	6	10	24.40	4.60	14.50	0.07
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	223.23	291.34	257.29	1.17
11. 9	paints and varnishes	11	11	16	42.70	46.80	44.75	0.20
12. 10	soap	23	23	26	110.07	96.73	103.40	0.47
13. 11	tanning	24	24	32	47.33	49.69	48.51	0.22
14. 12	cement	19	19	19	132.53	132.53	132.53	0.60
15. 13	glass and glassware	28	28	41	120.93	229.70	175.32	0.79
16. 14	ceramics	14	14	17	138.18	142.76	140.47	0.64
17. 15	plywood and tea chests	13	13	17	27.35	29.54	28.45	0.13
18. 16	paper and paper board	40	40	41	210.50	212.74	211.62	0.96
19. 17	matches	24	24	28	127.87	131.81	129.84	0.59
20. 18	cotton textiles : unclassified	7	7	9	139.53	132.35	135.94	0.62
21. 18a	„ : spinning mills	28	28	34	782.25	762.65	772.45	3.50
22. 18b	„ : composite mills	163	163	184	7938.61	7525.32	7731.96	34.99
23. 18c	„ : powerloom mills	12	12	20	283.25	217.80	250.52	1.13
24. 19	woollen textiles	17	17	20	127.98	189.17	158.58	0.72
25. 20	jute textiles	56	56	67	2529.14	2552.34	2540.79	11.49
26. 21	chemicals (including drugs)	42	42	56	417.21	374.71	395.96	1.79
27. 22a	aluminium, copper and brass : primary products	4	4	4	32.64	32.64	32.64	0.15
28. 22b	„ : secondary products	39	39	53	135.50	116.67	126.08	0.57
29. 23a	iron and steel : primary products	7	7	7	871.85	871.85	871.85	3.95
30. 23b	„ : secondary products	57	57	87	618.97	680.14	649.56	2.94
31. 24	bicycles	9	9	11	34.83	33.22	34.03	0.15
32. 25	sewing machines	6	6	6	31.99	31.99	31.99	0.14

TABLE 21—ESTIMATES OF SALARIES AND WAGES RECEIVED BY DIRECTLY EMPLOYED WORKERS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES: 1952

CMI classification		sample size (number of factories)			item : value of total salaries and wages received by workers unit : lakhs of rupees			percen to all facto- ries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
23. 27	electric lamps	7	7	7	12.98	12.98	12.98	0.06
34. 28	electric fans	8	8	9	37.92	36.95	37.43	0.17
35. 29	general engineering and electrical engineering : unspecified	11	11	17	179.18	312.18	245.84	1.11
36. 29a	.. .. : repairing works	19	19	32	256.89	263.71	260.30	1.18
37. 29b	.. .. : manufacturing	46	46	68	357.24	429.25	393.24	1.78
38. 30	footwear and leather manufacturing	12	12	13	106.94	105.04	105.99	0.48
39. 31	rubber and rubber manufacturing	36	36	46	153.62	168.36	160.99	0.73
40. 32	enamelware	3	3	5	19.06	19.84	19.45	0.09
41. 33	hume pipes and other cement and cement concrete products	8	8	11	20.58	20.35	20.46	0.09
42. 34	asbestos and asbestos cement products	5	5	5	34.31	34.31	34.31	0.16
43. 35	bricks, tiles, lime and surki manu- facturing	10	10	17	115.17	89.44	102.31	0.46
44. 36	lac	5	5	6	12.12	12.46	12.29	0.06
45. 37	turpentine and rosin	3	3	3	2.27	2.27	2.27	0.01
46. 38	plastics (including gramophone records)	5	5	8	25.95	26.40	26.18	0.12
47. 39	petroleum refining	3	3	3	25.02	25.02	25.02	0.11
48. 40	saw milling	17	17	25	58.86	58.18	58.52	0.26
49. 41	woodware (including furniture)	9	9	16	22.44	30.79	26.61	0.12
50. 42	tea manufacturing	62	62	121	416.20	361.52	388.86	1.76
51. 43	tobacco products	46	46	51	212.40	222.43	217.42	0.98
52. 44	groundnut decortiating etc.	25	25	36	81.69	44.58	63.13	0.29
53. 45	printing and bookbinding etc.	37	37	70	738.80	762.31	750.64	3.40
54. 46	webbing narrow fabrics	5	5	8	24.99	23.73	24.36	0.11
55. 47	hosiery and other knitted goods	7	7	12	50.02	83.27	66.65	0.30
56. 48	thread and thread ball making	2	2	3	1.30	1.30	1.30	0.01
57. 49	textiles dyeing, bleaching etc.	17	17	24	126.69	111.92	119.30	0.54
58. 50	clothing and tailoring	3	3	4	9.99	7.16	8.57	0.04
59. 51	cotton ginning and pressing	89	89	173	96.70	99.09	97.90	0.44
60. 52	rope making	5	5	6	16.03	15.10	15.56	0.07
61. 53	silk and artificial silk	23	23	35	339.99	382.80	361.39	1.64
62. 54	jute pressing	8	8	11	8.20	5.80	7.00	0.03
63. 55	electricity generation and trans- formation	20	20	30	496.14	367.23	431.68	1.95
64. 56	automobiles and coach building	63	63	92	371.94	346.56	359.25	1.63
65. 57	ship building and repairing	12	12	14	258.27	258.64	258.46	6.17
66. 60	aircraft assembling and repairing services	3	3	4	90.48	90.48	90.48	0.41
67. 62	textile machineries and accessories	11	11	14	58.94	76.64	67.78	0.31
68. 63	unspecified industries	139	139	212	1369.20	1382.71	1375.96	6.21
69.	all industries	1859	1859	2665	22167.69	22025.53	22096.61	100.00

# MANUFACTURING INDUSTRIES, 1952

TABLE 22. ESTIMATES OF SALARIES AND WAGES RECEIVED BY EMPLOYEES OTHER THAN WORKERS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES, 1952

CML classification		number of persons			and wages received by persons other than workers			percent- age to total indus- trial total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	26	24.94	20.61	22.77	0.35
2. 2	rice milling	116	116	301	81.45	84.09	82.77	1.26
3. 3	biscuit making	11	11	17	29.77	27.43	28.63	0.43
4. 4	fruits and vegetable processing	6	6	8	5.13	6.37	5.75	0.09
5. 5a	sugar : vacuum pan factory	81	81	94	254.21	268.92	268.36	4.08
6. 5b	" : refineries	3	3	4	3.36	3.36	3.36	0.05
7. 5c	" : gur factories	9	9	16	1.68	3.57	2.63	0.04
8. 6	distilleries and breweries	15	15	20	23.07	44.19	33.63	0.51
9. 7	starch	6	6	10	16.10	2.78	9.44	0.14
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	133.83	162.71	148.25	2.25
11. 9	paints and varnishes	11	11	16	27.37	25.61	31.49	0.48
12. 10	soap	23	23	26	46.37	35.45	40.91	0.62
13. 11	tanning	24	24	32	17.29	16.03	16.66	0.25
14. 12	cement	19	19	19	67.76	67.76	67.76	1.03
15. 13	glass and glassware	28	28	41	31.63	46.49	39.06	0.59
16. 14	ceramics	14	14	17	40.34	49.79	45.07	0.68
17. 15	plywood and tea chests	13	13	17	19.87	21.07	20.47	0.31
18. 16	paper and paper board	40	40	41	89.90	89.25	89.57	1.36
19. 17	matches	24	24	28	40.53	39.32	39.92	0.61
20. 18	cotton textiles : unclassified	7	7	9	22.78	21.86	22.32	0.34
21. 18a	" : spinning mills	28	28	34	110.06	121.12	115.59	1.76
22. 18b	" : composite mills	163	163	184	1017.25	1012.86	1015.06	5.42
23. 18c	" : powerloom mills	12	12	20	37.76	39.72	38.74	0.56
24. 19	woollen textiles	17	17	20	46.91	54.87	50.89	0.77
25. 20	jute textiles	56	56	67	307.34	312.62	309.98	4.17
26. 21	chemicals (including drugs)	42	42	56	262.21	276.76	269.49	4.09
27. 22a	aluminium, copper and brass : primary products	4	4	4	20.96	20.96	20.96	0.32
28. 22b	" : secondary products	39	39	53	69.15	62.92	66.03	1.00
29. 23a	iron and steel : primary products	7	7	7	373.81	373.81	373.81	5.68
30. 23b	" : secondary products	57	57	87	200.61	227.29	213.95	3.25
31. 24	bicycles	9	9	11	11.23	11.96	11.60	0.18
32. 25	sewing machines	6	6	6	8.21	8.21	8.21	0.12



TABLE 22 (Contd.): ESTIMATES OF EMOLUMENTS RECEIVED BY EMPLOYEES OTHER THAN WORKERS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of total salaries and wages received by persons other than workers unit : lakhs of rupees			percentage to all industries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
33. 27	electric lamps	7	7	7	8.79	8.79	8.79	0.13
34. 28	electric fans	8	8	9	28.22	25.90	27.06	0.41
35. 29	general engineering and electrical engineering : unspecified	11	11	17	90.68	158.95	124.82	1.90
36. 29a	" " : repairing works	19	19	32	99.41	61.82	80.61	1.22
37. 29b	" " : manufacturing	46	46	68	152.88	155.15	154.01	2.34
38. 30	footwear and leather manufacturing	12	12	13	101.37	101.54	101.46	1.54
39. 31	rubber and rubber manufacturing	36	36	46	106.68	120.88	113.78	1.73
40. 32	onamelware	3	3	5	4.43	5.71	5.07	0.08
41. 33	hume pipes and other cement and cement concrete products	8	8	11	6.93	11.28	9.10	0.14
42. 34	asbestos and asbestos cement products	5	5	5	2.51	2.51	2.51	0.04
43. 35	bricks, tiles, lime and surki manu- facturing	10	10	17	27.61	27.78	27.69	0.42
44. 36	lac	5	5	6	7.00	7.06	7.03	0.11
45. 37	turpentine and rosin	3	3	3	2.82	2.82	2.82	0.04
46. 38	plastics (including gramophone records)	5	5	8	10.73	12.50	11.61	0.18
47. 39	petroleum refining	3	3	3	16.76	16.76	16.76	0.25
48. 40	saw milling	17	17	25	18.44	22.18	20.31	0.31
49. 41	woodware (including furniture)	9	9	16	5.23	10.75	7.99	0.12
50. 42	tea manufacturing	62	62	121	250.56	248.44	249.50	3.79
51. 43	tobacco products	46	46	51	73.08	73.85	73.46	1.12
52. 44	groundnut decorticating etc.	25	25	36	32.58	19.02	25.80	0.39
53. 45	printing and bookbinding etc.	37	37	70	356.05	281.52	318.78	4.84
54. 46	webbing narrow fabrics	5	5	8	5.32	4.16	4.74	0.07
55. 47	hosiery and other knitted goods	7	7	12	8.01	24.24	16.12	0.24
56. 48	thread and thread ball making	2	2	3	0.93	0.93	0.93	0.01
57. 49	textiles dyeing, bleaching etc.	17	17	24	22.42	24.65	23.54	0.36
58. 50	clothing and tailoring	3	3	4	4.12	2.14	3.13	0.05
59. 51	cotton ginning and pressing	89	89	173	98.56	88.05	93.30	1.42
60. 52	rope making	5	5	6	3.04	2.96	3.00	0.05
61. 53	silk and artificial silk	23	23	35	51.04	57.95	54.49	0.83
62. 54	jute pressing	8	8	11	3.26	3.40	3.33	0.05
63. 55	electricity generation and trans- formation	20	20	30	719.47	232.04	475.76	7.23
64. 56	automobiles and coach building	63	63	92	259.62	258.16	258.86	3.93
65. 57	ship building and repairing	12	12	14	107.73	110.31	109.02	1.66
66. 60	aircraft assembling and repairing service	3	3	4	85.80	85.80	85.80	1.30
67. 62	textile machineries and accessories	11	11	14	15.07	24.04	19.56	0.30
68. 63	unspecified industries	139	139	212	515.49	541.14	528.32	8.04
69.	all industries	1859	1859	2665	6764.47	6399.95	6582.19	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 23 ESTIMATES OF TOTAL PAYMENT TO ALL EMPLOYEES IN THE FACTORIES  
USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of total payment to all employees unit : lakhs of rupees			percen- tage to all manu- factures total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	77.02	68.46	72.74	0.24
2. 2	rice milling	116	116	201	229.23	224.85	227.04	0.74
3. 3	biscuit making	11	11	17	88.44	76.43	82.43	0.27
4. 4	fruits and vegetable processing	6	6	8	8.73	19.16	13.95	0.05
5. 5a	sugar : vacuum pan factory	81	81	94	877.28	882.12	879.70	2.88
6. 5b	„ : refineries	3	3	4	13.39	13.39	13.39	0.04
7. 5c	„ : gur factories	9	9	16	13.76	23.65	18.71	0.06
8. 6	distilleries and breweries	15	15	20	66.31	114.41	90.22	0.30
9. 7	starch	6	6	10	42.88	8.03	25.45	0.08
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	392.11	493.36	442.74	1.44
11. 9	paints and varnishes	11	11	16	73.03	87.68	80.36	0.26
12. 10	soap	23	23	26	177.09	151.35	164.22	0.54
13. 11	tanning	24	24	32	67.68	73.67	70.67	0.23
14. 12	cement	19	19	19	236.72	236.72	236.72	0.78
15. 13	glass and glassware	28	28	41	158.79	283.07	220.93	0.72
16. 14	ceramics	14	14	17	220.60	223.30	221.95	0.73
17. 15	plywood and tea chests	13	13	17	54.24	52.46	53.35	0.17
18. 16	paper and paper board	40	40	41	338.30	340.02	339.16	1.11
19. 17	matches	24	24	28	192.69	195.69	194.14	0.64
20. 18	cotton textiles: unclassified	7	7	9	170.24	161.67	165.80	0.54
21. 18a	„ : spinning mills	28	28	34	919.14	909.30	914.22	3.00
22. 18b	„ : composite mills	163	163	184	9216.35	8770.06	8993.20	29.47
23. 18c	„ : powerloom mills	12	12	20	329.80	262.86	296.33	0.97
24. 19	woollen textiles	17	17	20	180.00	254.56	217.28	0.71
25. 20	jute textiles	56	56	67	2965.15	2990.08	2977.62	9.76
26. 21	chemicals (including drugs)	42	42	56	727.65	711.80	719.73	2.36
27. 22a	aluminium, copper and brass							
	: primary products	4	4	4	63.02	63.02	63.02	0.21
28. 22b	„ „ : secondary products	39	39	53	228.77	198.02	213.40	0.70
29. 23a	iron and steel : primary products	7	7	7	1390.00	1390.00	1390.00	4.55
30. 23b	„ : secondary products	57	57	87	872.93	958.37	915.65	3.00
31. 24	bicycles	9	9	11	54.28	53.41	53.85	0.27
32. 25	sewing machines	6	6	6	41.21	41.21	41.21	0.14
33. 27	electric lamps	7	7	7	23.48	23.48	23.48	0.08

TABLE 23 (cont.) ESTIMATES OF TOTAL PAYMENT TO ALL EMPLOYEES IN THE FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES: 1952

CMI classification		sample size (number of factories)			item : value of total payment to all employees unit : lakhs of rupees			percen- tage to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	69.71	66.41	68.06	0.22
35. 29	general engineering and electrical engineering : unspecified	11	11	17	291.48	504.43	397.95	1.30
36. 29a	" : repairing works	19	19	32	377.69	333.74	355.70	1.17
37. 29b	" : manufacturing	46	46	68	534.95	622.40	578.67	1.90
38. 30	footwear and leather manufacturing	12	12	13	223.32	221.50	222.37	0.73
39. 31	rubber and rubber manufacturing	36	36	46	281.82	311.59	296.71	0.97
40. 32	enamelware	3	3	3	25.09	27.20	26.15	0.09
41. 33	hume pipes and other cement and cement concrete products	8	8	11	30.74	34.30	32.52	0.11
42. 34	asbestos and asbestos cement products	5	5	5	42.15	42.15	42.15	0.14
43. 35	bricks, tiles, lime and surki manu- facturing	10	10	17	149.30	121.21	135.26	0.44
44. 36	lac	5	5	6	22.12	22.52	22.32	0.07
45. 37	turpentine and rosin	3	3	3	5.87	5.87	5.87	0.02
46. 38	plastics (including gramophone records)	5	5	8	37.10	40.60	38.85	0.13
47. 49	petroleum refining	3	3	3	54.71	54.71	54.71	0.18
48. 40	saw milling	17	17	25	78.54	86.76	82.65	0.27
49. 41	woodware (including furniture)	9	9	16	39.22	43.63	41.42	0.14
50. 42	tea manufacturing	62	62	121	794.24	750.13	772.19	2.52
51. 43	tobacco products	46	46	51	322.72	336.64	329.68	1.08
52. 44	groundnut decorticating etc.	25	25	36	119.54	64.38	91.96	0.30
53. 45	printing and bookbinding etc.	37	37	70	1139.31	1077.78	1108.54	3.64
54. 46	wobbing narrow fabrics	5	5	8	32.41	28.66	30.54	0.10
55. 47	hosiery and other knitted goods	7	7	12	67.10	115.59	91.34	0.30
56. 48	thread and thread ball making	2	2	3	2.22	2.22	2.22	0.01
57. 49	textiles dyeing, bleaching etc.	17	17	24	153.78	164.91	159.34	0.52
58. 50	clothing and tailoring	3	3	4	18.40	13.60	16.00	0.05
59. 51	cotton ginning and pressing	89	89	173	251.51	246.40	248.95	0.82
60. 52	rope making	5	5	6	20.89	19.89	20.39	0.07
61. 53	silk and artificial silk	23	23	35	396.88	448.01	422.44	1.38
62. 54	jute pressing	8	8	11	18.28	11.52	14.90	0.05
63. 55	electricity generation and trans- formation	20	20	30	1275.80	647.31	961.55	3.15
64. 56	automobiles and coach building	63	63	92	671.81	640.44	656.13	2.15
65. 57	ship building and repairing	12	12	14	389.95	410.40	400.17	1.31
66. 60	aircraft assembling and repairing services	3	3	4	188.13	188.13	188.13	0.62
67. 62	textile machineries and accessories	11	11	14	77.16	103.49	90.33	0.30
68. 63	unspecified industries	139	139	212	2041.80	2059.87	2050.84	6.71
69.	all industries	1859	1859	2665	30755.97	30732.35	30489.66	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 24 ESTIMATES OF INPUT (A) FUELS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of input A) fuels (unit : lakhs of rupees)			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	26.21	26.74	26.48	0.33
2. 2	rice milling	116	116	201	112.33	97.42	104.87	1.31
3. 3	biscuit making	11	11	17	16.57	12.33	14.45	0.18
4. 4	fruits and vegetable processing	6	6	8	2.35	2.56	2.46	0.03
5. 5a	sugar : vacuum pan factory	81	81	94	200.75	196.43	198.59	2.43
6. 5b	„ : refineries	3	3	4	1.84	1.84	1.84	0.02
7. 5c	„ : gur factories	9	9	16	4.78	8.43	6.60	0.08
8. 6	distilleries and breweries	15	15	20	21.40	38.99	30.10	0.38
9. 7	starch	6	6	10	13.02	2.53	7.77	0.30
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	225.12	275.04	250.08	3.12
11. 9	paints and varnishes	11	11	16	6.26	13.81	10.03	0.13
12. 10	soap	23	23	26	43.79	36.25	40.02	0.50
13. 11	tanning	24	24	32	5.22	5.66	5.44	0.07
14. 12	cement	19	19	19	403.43	403.43	403.43	5.04
15. 13	glass and glassware	28	28	41	153.81	111.16	132.48	1.65
16. 14	ceramics	14	14	17	82.72	92.60	87.66	1.09
17. 15	plywood and tea chests	13	13	17	7.02	7.80	7.41	0.09
18. 16	paper and paper board	40	40	41	267.62	268.35	267.98	3.35
19. 17	matches	24	24	28	10.16	10.00	10.08	0.13
20. 18	cotton textiles : unclassified	7	7	9	40.81	41.84	41.33	0.52
21. 18a	„ : spinning mills	28	28	34	122.19	175.63	148.91	1.86
22. 18b	„ : composite mills	163	163	184	1536.66	1465.97	1501.32	18.75
23. 18c	„ : powerloom mills	12	12	20	53.31	39.92	46.62	0.58
24. 19	woollen textiles	17	17	20	31.00	42.09	36.55	0.46
25. 20	jute textiles	56	56	67	272.62	283.96	278.29	3.47
26. 21	chemicals (including drugs)	42	42	56	318.67	367.04	342.86	4.28
27. 22a	aluminium, copper and brass : primary products	4	4	4	33.56	33.56	33.56	0.42
28. 22b	„ : secondary products	39	39	53	60.96	41.16	51.06	0.64
29. 23a	iron and steel : primary products	7	7	7	1071.37	1071.37	1071.37	13.38
30. 23b	„ : secondary products	57	57	87	172.69	203.04	187.87	2.35
31. 24	bicycles	9	9	11	4.25	4.39	4.32	0.05
32. 25	sewing machines	6	6	6	3.12	3.12	3.12	0.04
33. 27	electric lamps	7	7	7	4.33	4.33	4.33	0.05



TABLE 24 (Contd.): ESTIMATES OF INPUT [(A) FUELS] IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of input (A) fuels unit : lakhs of rupees			percentage to all industries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	2.89	2.52	2.70	0.03
35. 29	general engineering and electrical engineering : unspecified	11	11	17	28.34	62.41	45.37	0.57
36. 29a	" " : repairing works	19	19	32	51.57	36.47	44.02	0.55
37. 29b	" " : manufacturing	46	46	68	55.61	83.35	69.48	0.87
38. 30	footwear and leather manufacturing	12	12	13	15.20	15.06	15.14	0.19
39. 31	rubber and rubber manufacturing	36	36	46	55.96	53.56	54.76	0.68
40. 32	enamelware	3	3	5	4.42	5.24	4.83	0.06
41. 33	hume pipes and other cement and cement concrete products	8	8	11	8.75	9.26	9.00	0.11
42. 34	asbestos and asbestos cement products	5	5	5	2.82	2.82	2.82	0.04
43. 35	bricks, tiles, lime and surki manu- facturing	10	10	17	115.60	64.90	90.25	1.13
44. 36	lac	5	5	6	2.94	2.77	2.85	0.04
45. 37	turpentine and rosin	3	3	3	2.72	2.72	2.72	0.03
46. 38	plastics (including gramophone records)	5	5	8	4.46	5.00	4.73	0.06
47. 39	petroleum refining	3	3	3	28.20	28.20	28.20	0.35
48. 40	saw milling	17	17	25	14.93	9.70	12.31	0.15
49. 41	woodware (including furniture)	9	9	16	2.27	2.59	2.43	0.03
50. 42	tea manufacturing	62	62	121	341.19	430.54	385.86	4.82
51. 43	tobacco products	46	46	51	19.64	20.44	20.04	0.25
52. 44	groundnut decorticating etc.	25	25	36	35.63	13.33	24.48	0.31
53. 45	printing and bookbinding etc.	37	37	70	47.40	33.37	40.39	0.50
54. 46	webbing narrow fabrics	5	5	8	3.94	1.96	2.95	0.04
55. 47	hosiery and other knitted goods	7	7	12	6.68	11.43	9.06	0.11
56. 48	thread and thread ball making	2	2	3	0.60	0.60	0.60	0.01
57. 49	textiles dyeing, bleaching etc.	17	17	24	87.59	77.29	82.44	1.03
58. 50	clothing and tailoring	3	3	4	0.32	0.22	0.27	0.00
59. 51	cotton ginning and pressing	89	89	173	159.13	124.96	142.04	1.77
60. 52	rope making	5	5	6	1.43	1.36	1.39	0.02
61. 53	silk and artificial silk	23	23	35	45.24	47.48	46.36	0.58
62. 54	jute pressing	8	8	11	3.60	3.63	3.56	0.04
63. 55	electricity generation and trans- formation	20	20	30	1137.01	773.65	955.33	11.93
64. 56	automobiles and coach building	63	63	92	81.15	88.97	85.06	1.06
65. 57	ship building and repairing	12	12	14	21.05	20.32	20.68	0.26
66. 60	aircraft assembling and repairing services	3	3	4	71.32	71.32	71.32	0.89
67. 62	textile machineries and accessories	11	11	14	8.56	13.02	10.79	0.13
68. 63	unspecified industries	139	139	212	457.62	252.35	354.99	4.43
69. .	all industries	1859	1859	2665	8255.62	7761.61	8008.62	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 25 : ESTIMATES OF INPUT [(B) RAW MATERIALS] IN FACTORIES USING POWER  
BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of input (B) raw materials unit : lakhs of rupees			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	2212.61	1985.17	2098.89	1.64
2. 2	rice milling	116	116	201	6553.38	7118.13	6835.76	5.34
3. 3	biscuit making	11	11	17	449.80	360.43	405.12	0.32
4. 4	fruits and vegetables	6	6	8	27.94	91.40	59.67	0.05
5. 5a	sugar : vacuum pan factory	81	81	94	8041.85	6975.12	7508.49	5.87
6. 5b	„ : refineries	3	3	4	100.44	100.44	100.44	0.08
7. 5c	„ : gur factories	9	9	16	110.09	167.76	138.92	0.11
8. 6	distilleries and breweries	15	15	20	180.38	361.31	270.85	0.21
9. 7	starch	6	6	10	350.82	55.89	203.35	0.16
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	11975.27	17203.48	14589.38	11.40
11. 9	paints and varnishes	11	11	16	473.35	1166.00	819.67	0.64
12. 10	soap	23	23	26	1621.70	1531.24	1576.47	1.23
13. 11	tanning	24	24	32	620.93	653.42	637.17	0.50
14. 12	cement	19	19	19	896.92	896.92	896.92	0.70
15. 13	glass and glassware	28	28	41	213.06	328.80	270.93	0.21
16. 14	ceramics	14	14	17	131.44	136.47	133.95	0.10
17. 15	plywood and tea chests	13	13	17	326.66	205.75	266.21	0.21
18. 16	paper and paper board	40	40	41	1018.94	1000.54	1009.74	0.79
19. 17	matches	24	24	28	406.93	427.35	417.14	0.33
20. 18	cotton textiles : unclassified	7	7	9	462.52	448.48	455.50	0.36
21. 18a	„ : spinning mills	28	28	34	3634.41	3995.68	3815.04	2.98
22. 18b	„ : composite mills	163	163	184	27063.09	25244.47	26153.78	20.44
23. 18c	„ : powerloom mills	12	12	20	1501.25	1059.44	1280.35	1.00
24. 19	woollen textiles	17	17	20	629.53	1089.60	859.57	0.67
25. 20	jute textiles	56	56	67	11645.50	12032.11	11838.81	9.25
26. 21	chemicals (including drugs)	42	42	56	3403.53	2675.30	3039.41	2.37
27. 22a	aluminium, copper and brass : primary products	4	4	4	285.17	285.17	285.17	0.22
28. 22b	„ „ : secondary products	39	39	53	3173.35	1032.90	2103.12	1.64
29. 23a	iron and steel : primary products	7	7	7	1948.47	1948.47	1948.47	1.52
30. 23b	„ „ : secondary products	57	57	87	2435.54	2622.65	2529.09	1.98
31. 24	bicycles	9	9	11	136.66	134.14	135.40	0.11
32. 25	sewing machines	6	6	6	26.76	26.76	26.76	0.02
33. 27	electric lamps	7	7	7	61.50	61.50	61.50	0.05

TABLE 25 (Contd.) ESTIMATES OF INPUT (B) RAW MATERIALS] IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of input (B) raw materials unit : lakhs of rupees			percentage to all industries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	118.84	129.02	123.93	0.10
35. 29	general engineering and electrical engineering : unspecified	11	11	17	418.34	806.18	612.26	0.48
36. 29a	" " : repairing works	19	19	32	509.47	513.80	511.63	0.40
37. 29b	" " : manufacturing	46	46	68	1034.49	1361.60	1198.05	0.94
38. 30	footwear and leather manufacturing	12	12	13	444.27	435.46	439.87	0.34
39. 31	rubber and rubber manufacturing	36	36	46	1669.74	1618.87	1644.30	1.28
40. 32	enamelware	3	3	5	33.37	39.37	36.37	0.03
41. 33	hume pipes and other cement and cement concrete products	8	8	11	61.14	76.93	69.04	0.05
42. 34	asbestos and asbestos cement products	5	5	5	167.65	167.65	167.65	0.13
43. 35	bricks, tiles, lime and surki manu- facturing	10	10	17	111.04	146.18	128.61	0.10
44. 36	lac	5	5	6	136.24	129.59	132.91	0.10
45. 37	turpentine and rosin	3	3	3	52.94	52.94	52.94	0.04
46. 38	plastics (including gramophone records)	5	5	8	106.99	203.06	155.02	0.12
47. 39	petroleum refining	3	3	3	243.68	243.68	243.68	0.19
48. 40	saw milling	17	17	25	133.88	231.88	182.88	0.14
49. 41	woodware (including furniture)	9	9	16	139.13	58.44	98.78	0.08
50. 42	tea manufacturing	62	62	121	8054.85	6727.72	7391.28	5.78
51. 43	tobacco products	46	46	51	3454.26	3175.87	3315.06	2.59
52. 44	groundnut decorticating etc.	25	25	36	1360.72	1529.03	1444.87	1.13
53. 45	printing and bookbinding etc.	37	37	70	1790.91	1430.28	1610.59	1.26
54. 46	webbing narrow fabrics	5	5	8	124.54	92.25	108.40	0.08
55. 47	hosiery and other knitted goods	7	7	12	239.97	657.74	448.85	0.35
56. 48	thread and thread ball making	2	2	3	41.49	41.49	41.49	0.03
57. 49	textiles dyeing, bleaching etc.	17	17	24	368.04	531.55	449.80	0.35
58. 50	clothing and tailoring	3	3	4	128.15	100.87	114.51	0.09
59. 51	cotton ginning and pressing	89	89	173	4790.68	3428.94	4109.81	3.21
60. 52	rope making	5	5	6	105.28	101.25	103.27	0.08
61. 53	silk and artificial silk	23	23	35	1571.38	1364.00	1467.69	1.15
62. 54	jute pressing	8	8	11	23.20	22.18	22.69	0.02
63. 55	electricity generation and trans- formation	20	20	30	1264.41	933.17	1098.79	0.86
64. 56	automobiles and coach building	63	63	92	2040.45	1895.45	1967.95	1.54
65. 57	ship building and repairing	12	12	14	252.46	267.08	259.77	0.20
66. 60	aircraft assembling and repairing services	3	3	4	178.35	178.35	178.35	0.14
67. 62	textile machineries and accessories	11	11	14	97.50	192.64	145.07	0.11
68. 63	unspecified industries	139	139	212	5113.46	5145.81	5129.63	4.01
69.	all industries	1859	1859	2665	128501.10	127452.61	127976.81	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 26 ESTIMATES OF INPUT AND WORK DONE BY OTHER CONCERNS IN  
FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLE : 1952

CMI classification		sample size number of factories			item : value of input (C) work done by other concerns unit : lakhs of rupees			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat and flour	27	27	38	0.22	1.44	0.83	0.09
2. 2	rice milling	116	116	201	13.37	6.02	9.70	1.02
3. 3	biscuit making	11	11	17	1.31	1.74	1.52	0.16
4. 4	fruits and vegetable processing	6	6	8	3.06	3.06	3.06	0.32
5. 5a	sugar : vacuum pan factories	81	81	94	22.18	9.66	15.87	1.67
6. 5b	" : refineries	3	3	4	—	—	—	—
7. 5c	" : gur factories	9	9	16	—	0.01	0.01	0.00
8. 6	distilleries and breweries	15	15	20	0.47	0.01	0.24	0.04
9. 7	starch	6	6	10	—	—	—	—
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	8.77	9.39	9.07	0.95
11. 9	paints and varnishes	11	11	16	—	0.11	0.06	0.01
12. 10	soap	23	23	26	0.83	0.83	0.83	0.09
13. 11	tanning	24	24	32	1.28	0.10	0.69	0.07
14. 12	cement	19	19	19	7.25	7.25	7.25	0.76
15. 13	glass and glassware	28	28	41	1.02	2.02	1.52	0.16
16. 14	ceramics	14	14	17	4.96	0.02	2.49	0.26
17. 15	plywood and tea chests	13	13	17	0.35	0.35	0.35	0.04
18. 16	paper and paper board	40	40	51	14.95	14.05	14.95	1.57
19. 17	matches	24	24	28	0.36	0.36	0.36	0.04
20. 18	cotton textiles : unclassified	7	7	9	0.84	1.16	1.00	0.10
21. 18a	" " : spinning mills	28	28	34	1.34	1.34	1.34	0.14
22. 18b	" " : composite mills	163	163	184	211.95	196.04	204.00	21.46
23. 18c	" " : powerloom mills	12	12	20	109.40	82.98	96.17	10.12
24. 19	woollen textiles	17	17	20	2.10	0.24	1.17	0.12
25. 20	jute textiles	56	56	67	6.63	4.32	5.47	0.58
26. 21	chemicals (including drugs)	42	42	56	5.62	3.44	4.53	0.48
27. 22a	aluminium, copper and brass : primary products	4	4	4	0.73	0.73	0.73	0.08
28. 22b	" : secondary products	39	39	53	5.05	10.44	7.74	0.81
29. 23a	iron and steel : primary products	7	7	7	16.54	16.54	16.54	1.74
30. 23b	" : secondary products	57	57	87	23.44	62.21	42.82	4.50
31. 24	bicycles	9	9	11	0.21	0.28	0.25	0.03
32. 25	sewing machines	6	6	6	0.04	0.04	0.04	0.00
33. 27	electric lamps	7	7	7	1.34	1.34	1.34	0.14



TABLE 26 (Contd.) ESTIMATES OF INPUT (C) WORK DONE BY OTHER CONCERNS, IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of input (C) work done by other concerns unit : lakhs of rupees			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	1.02	1.45	1.23	0.13
35. 29	general engineering and electrical engineering : unspecified	11	11	17	13.12	17.76	15.44	1.62
36. 29a	" : repairing works	19	19	32	3.20	5.61	4.41	0.66
37. 29b	" : manufacturing	46	46	68	3.32	9.21	6.27	0.66
38. 30	footwear and leather manufacturing	12	12	13	0.36	0.36	0.36	0.04
39. 31	rubber and rubber manufacturing	36	36	46	1.98	3.03	2.51	0.26
40. 32	enamelware	3	3	5	0.11	—	0.06	0.01
41. 33	hume pipes and other cement and cement concrete products	8	8	11	—	0.12	0.06	0.01
42. 34	asbestos and asbestos cement products	5	5	5	—	—	—	—
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	—	—	—	—
44. 36	lac	5	5	6	—	—	—	—
45. 37	turpentine and rosin	3	3	3	—	—	—	—
46. 38	plastics (including gramophone records)	5	5	8	5.23	5.23	5.23	0.55
47. 39	petroleum refining	3	3	3	—	—	—	—
48. 40	saw milling	17	17	25	0.01	0.01	0.01	0.00
49. 41	woodware (including furniture)	9	9	16	—	—	—	—
50. 42	tea manufacturing	62	62	121	3.06	5.52	4.29	0.45
51. 43	tobacco products	46	46	51	62.04	63.09	62.57	6.58
52. 44	groundnut decorticating etc.	25	25	36	0.12	2.11	1.11	0.12
53. 45	printing and bookbinding etc.	37	37	70	94.44	52.82	73.63	7.74
54. 46	webbing narrow fabrics	5	5	8	0.30	2.49	1.40	0.15
55. 47	hosiery and other knitted goods	7	7	12	5.88	26.60	16.24	1.71
56. 48	thread and thread ball making	2	2	3	—	—	—	—
57. 49	textiles dyeing and bleaching etc.	17	17	24	6.38	9.03	7.70	0.81
58. 50	clothing and tailoring	3	3	4	1.69	—	0.84	0.09
59. 51	cotton ginning and pressing	89	89	173	4.67	4.53	4.60	0.48
60. 52	rope making	5	5	6	—	0.01	0.00	0.00
61. 53	silk and artificial silk	23	23	35	40.81	82.33	61.57	6.48
62. 54	jute pressing	8	8	11	0.09	—	0.04	0.00
63. 55	electricity generation and transformation	20	20	30	13.27	12.74	13.01	1.37
64. 56	automobiles and coach building	63	63	92	20.59	12.57	16.58	1.47
65. 57	ship building and repairing	12	12	14	52.88	52.88	52.88	5.56
66. 60	aircraft assembling and repairing services	3	3	4	2.27	2.27	2.27	0.24
67. 62	textile machineries and accessories	11	11	14	0.62	1.64	1.13	0.12
68. 63	unspecified industries	139	139	212	143.20	143.56	143.38	15.08
69.	all industries	1859	1859	2665	946.27	955.24	950.74	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 27 : ESTIMATES OF TOTAL INPUT IN FACTORIES USING POWER BY INDUSTRIES  
AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			mean value of total input unit : lakhs of rupees			percentage to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	2229.04	2013.36	2126.20	1.55
2. 2	rice milling	116	116	201	6679.08	7221.57	6950.33	5.08
3. 3	biscuit making	11	11	17	467.68	374.50	421.09	0.31
4. 4	fruits and vegetable processing	6	6	8	33.35	97.02	65.19	0.05
5. 5a	sugar : vacuum pan factory	81	81	94	8264.78	7181.11	7722.95	5.64
6. 5b	„ : refineries	3	3	4	102.30	102.30	102.30	0.07
7. 5c	„ : gur factories	9	9	16	114.87	176.20	145.53	0.11
8. 6	distilleries and breweries	15	15	20	202.25	400.31	301.28	0.22
9. 7	starch	6	6	10	363.84	58.42	211.12	0.15
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	12209.16	17487.53	14848.53	10.85
11. 9	paints and varnishes	11	11	16	479.61	1179.92	829.76	0.61
12. 10	soap	23	23	26	1666.32	1568.32	1617.32	1.18
13. 11	tanning	24	24	32	627.43	659.18	643.30	0.47
14. 12	cement	19	19	19	1307.60	1307.60	1307.60	0.95
15. 13	glass and glassware	28	28	41	367.89	441.98	404.93	0.30
16. 14	ceramics	14	14	17	219.12	229.69	224.10	0.16
17. 15	plywood and tea chests	13	13	17	334.03	213.90	273.97	0.20
18. 16	paper and paper board	40	40	41	1301.41	1283.84	1292.67	0.94
19. 17	matches	24	24	25	417.45	437.71	427.58	0.31
20. 18	cotton textiles : unclassified	7	7	9	504.17	491.48	497.83	0.36
21. 18a	„ : spinning mills	28	28	34	3757.94	4172.65	3965.29	2.90
22. 18b	„ : composite mills	163	163	184	28811.70	26906.48	27859.10	20.34
23. 18c	„ : powerloom mills	12	12	20	1663.96	1182.29	1423.14	1.04
24. 19	woollen textiles	17	17	20	662.63	1131.93	897.29	0.65
25. 20	jute textiles	56	55	67	11924.75	12320.39	12122.57	8.85
26. 21	chemicals (including drugs)	42	42	56	3727.82	3045.78	3386.80	2.47
27. 22a	aluminium, copper and brass : primary products	4	4	4	319.46	319.46	319.46	0.23
28. 22b	„ „ : secondary products	39	39	53	3239.36	1084.50	2161.92	1.58
29. 23a	iron and steel : primary products	7	7	7	3036.38	3036.38	3036.38	2.22
30. 23b	„ : secondary products	57	57	87	2631.67	2887.90	2759.78	2.02
31. 24	bicycles	9	9	11	141.12	138.81	139.97	0.10
32. 25	sewing machines	6	6	6	29.92	29.92	29.92	0.02
33. 27	electric lamps	7	7	7	67.17	67.17	67.17	0.05

TABLE 27 (cont.) ESTIMATES OF TOTAL INPUT IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES: 1952

CMI classification		sample size number of factories			item: value of total input unit: lakhs of rupees			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	6	8	9	122.75	132.99	127.86	0.09
35. 29	general engineering and electrical engineering							
	unspecified	11	11	17	459.80	886.35	673.07	0.49
36. 29a	.. : repairing works	19	19	32	564.24	555.88	560.06	0.41
37. 29b	.. : manufacturing	46	46	68	1093.42	1454.16	1273.80	0.93
38. 30	footwear and leather manufacturing	12	12	13	549.83	450.88	455.37	0.33
39. 31	rubber and rubber manufacturing	36	36	46	1727.68	1675.46	1701.57	1.24
40. 32	enamelware	3	3	5	37.90	44.61	41.26	0.03
41. 33	hume pipes and other cement and cement concrete products	8	8	11	69.89	86.31	78.10	0.06
42. 34	adbestos and asbestos cement products	5	5	5	170.47	170.47	170.47	0.12
43. 35	bricks, tiles, lime and surki manu- facturing	10	10	17	226.64	211.08	218.86	0.16
44. 36	lac	5	5	6	139.18	132.36	135.77	0.10
45. 37	turpentine and rosin	3	3	3	55.66	55.66	55.66	0.04
46. 38	plastics (including gramophone records)	5	5	8	116.68	213.29	164.98	0.12
47. 39	petroleum refining	3	3	3	271.88	271.88	271.88	0.20
48. 40	saw milling	17	17	25	148.82	241.59	195.20	0.14
49. 41	woodware (including furniture)	9	9	16	141.40	61.03	101.21	0.07
50. 42	tea manufacturing	62	62	121	8399.10	7163.78	7781.43	5.68
51. 43	tobacco products	46	46	51	3535.94	3259.40	3397.67	2.48
52. 44	groundnut desorting etc.	25	25	36	1396.47	1544.47	1470.46	1.07
53. 45	printing and bookbinding etc.	37	37	70	1932.75	1516.47	1724.61	1.26
54. 46	webbing narrow fabrics	5	5	8	128.78	96.70	112.75	0.08
55. 47	hosiery and other knitted goods	7	7	12	252.53	695.77	474.15	0.35
56. 48	thread and thread ball making	2	2	3	42.09	42.09	42.09	0.03
57. 49	textiles dyeing, bleaching etc.	17	17	24	462.01	617.85	539.94	0.39
58. 50	clothing and tailoring	3	3	4	130.16	101.09	115.62	0.08
59. 51	cotton ginning and pressing	89	89	173	4954.48	3558.43	4256.45	3.11
60. 52	rope making	5	5	6	106.76	102.62	104.69	0.08
61. 53	silk and artificial silk	23	23	35	1657.43	1493.81	1575.62	1.15
62. 54	jute pressing	8	8	11	26.79	25.81	26.29	0.02
63. 55	electricity generation and trans- formation	20	20	30	2414.69	1719.56	2067.13	1.51
64. 56	automobiles and coach building	63	63	92	2142.19	1996.99	2069.59	1.51
65. 57	ship building and repairing	12	12	14	326.39	340.28	333.33	0.24
66. 60	aircraft assembling and repairing services	3	3	4	251.94	251.94	251.94	0.18
67. 62	textile machineries and accessories	11	11	14	106.68	207.30	156.99	0.11
68. 63	unspecified industries	139	139	212	5714.28	5541.72	5628.00	4.11
69.	all industries	1859	1859	2665	137703.06	136169.46	136936.24	100.00

# MANUFACTURING INDUSTRIES: 1952

TABLE 28. ESTIMATES OF OUTPUT (A) PRODUCTS AND BY-PRODUCTS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES, 1952

C.M.I. classification		sample size number of factories			Item: value of output (A) products and by-products (unclassified) value of by-products			percentage to all other series total
number	description	sample 1	sample 2	total bined	sample 1	sample 2	total bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	28	2406.81	2102.05	2255.43	1.20
2. 2	rice milling	116	116	201	7097.22	7621.34	7259.33	2.91
3. 3	biscuit making	11	11	17	675.22	526.29	600.60	0.32
4. 4	fruits and vegetable processing	6	6	8	41.58	153.31	97.44	0.05
5. 5a	sugar: vacuum pan factory	81	81	94	10922.02	9724.27	10323.15	5.49
6. 5b	" : refineries	3	3	4	121.50	121.50	121.50	0.06
7. 5c	" : gur factories	9	9	16	125.45	222.01	173.73	0.09
8. 6	distilleries and breweries	15	15	20	394.35	862.00	628.18	0.33
9. 7	starch	6	6	10	514.88	71.49	294.19	0.16
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	12914.16	19265.91	16090.04	8.56
11. 9	paints and varnishes	11	11	16	722.44	1708.90	1215.67	0.65
12. 10	soap	23	23	26	2532.87	2369.46	2461.16	1.31
13. 11	tanning	24	24	33	793.35	794.97	794.16	0.42
14. 12	cement	19	19	19	2298.93	2298.93	2298.93	1.22
15. 13	glass and glassware	28	28	41	569.26	716.13	642.69	0.34
16. 14	ceramics	14	14	17	512.26	540.10	526.18	0.28
17. 15	plywood and tea chests	13	13	17	473.15	324.48	398.83	0.21
18. 16	paper and paper board	40	40	41	2165.38	2134.60	2149.99	1.14
19. 17	matches	24	24	28	782.02	792.47	787.24	0.42
20. 18	cotton textiles: unclassified	7	7	9	709.00	729.41	719.20	0.38
21. 18a	" : spinning mills	28	28	34	5084.19	5357.35	5220.77	2.77
22. 18b	" : composite mills	163	163	184	40318.22	37542.30	38930.26	20.69
23. 18c	" : powerloom mills	12	12	20	2079.37	1588.52	1833.94	0.97
24. 19	woollen textiles	17	17	20	978.26	1935.56	1456.91	0.77
25. 20	jute textiles	56	56	67	16994.91	17332.01	17163.46	9.12
26. 21	chemicals (including drugs)	42	42	56	6001.08	5278.84	5639.96	3.00
27. 22a	aluminium, copper and brass							
	" : primary products	4	4	4	380.80	380.80	380.80	0.20
28. 22b	" : secondary products	39	39	53	3520.24	1379.66	2449.95	1.30
29. 23a	iron and steel : primary products	7	7	7	6017.37	6017.37	6017.37	3.20
30. 23b	" : secondary products	57	57	87	4198.49	4353.67	4276.08	2.27
31. 24	bicycles	9	9	11	253.24	250.13	251.68	0.13
32. 25	sewing machines	6	6	6	117.30	117.30	117.30	0.06
33. 27	electric lamps	7	7	7	144.60	144.60	144.60	0.08



TABLE 28. *continued* ESTIMATES OF OUTPUT (A) PRODUCTS AND BY PRODUCTS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES - 1952

CMI classification		sample size (number of factories)			item : value of output (A) products and by-product-produced unit : lakhs of rupees			percentage to all industries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	245.41	214.99	230.20	0.12
35. 29	general engineering and electrical engineering : unspecified	11	11	17	840.53	1321.94	1081.24	0.57
36. 29a	" " : repairing works	19	19	32	637.25	641.29	639.27	0.34
37. 29b	" " : manufacturing	46	45	68	1777.29	2336.77	2057.03	1.09
38. 30	footwear and leather manufacturing	12	12	13	842.06	842.06	842.06	0.45
39. 31	rubber and rubber manufacturing	36	36	46	2644.00	2720.28	2682.14	1.43
40. 32	enamelware	3	3	5	94.83	79.43	87.13	0.05
41. 33	hume pipes and other cement and cement concrete products	8	8	11	106.91	212.43	159.67	0.08
42. 34	asbestos and asbestos cement products	5	5	5	209.06	209.06	209.06	0.11
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	500.68	461.39	481.03	0.26
44. 36	lac	5	5	6	183.26	178.37	180.81	0.10
45. 37	turpentine and rosin	3	3	3	74.32	74.32	74.32	0.04
46. 38	plastics (including gramophone records)	4	5	8	183.03	320.34	251.69	0.13
47. 39	petroleum refining	3	3	3	723.66	723.66	723.66	0.38
48. 40	saw milling	17	17	25	195.87	338.09	266.98	0.14
49. 41	woodware (including furniture)	9	9	16	209.00	113.34	161.17	0.09
50. 42	tea manufacturing	62	62	21	11555.79	10759.02	11157.41	5.93
51. 43	tobacco products	46	46	51	4276.45	4022.81	4149.63	2.20
52. 44	groundnut decorticating etc.	25	25	36	1517.11	1673.62	1595.36	0.85
53. 45	printing and bookbinding etc.	37	37	70	2982.53	1870.73	2426.63	1.20
54. 46	webbing narrow fabrics	5	5	8	172.93	142.30	157.62	0.08
55. 47	hosiery and other knitted goods	7	7	12	399.27	1010.92	705.10	0.37
56. 48	thread and thread ball making	2	2	3	43.80	43.80	43.80	0.02
57. 49	textiles dyeing, bleaching etc.	17	17	24	272.18	463.79	367.99	0.20
58. 50	clothing and tailoring	3	3	4	149.95	103.76	126.85	0.07
59. 51	cotton ginning and pressing	89	89	173	5276.91	3504.50	4390.70	2.34
60. 52	rope making	5	5	6	134.64	131.31	132.97	0.07
61. 53	silk and artificial silk	23	23	25	2223.96	2060.26	2141.11	1.14
62. 54	jute pressing	8	8	11	25.65	25.65	25.65	0.01
63. 55	electricity generation and transformation	20	20	30	5670.49	3659.30	4664.90	2.48
64. 56	automobiles and coach building	63	63	92	2135.24	2130.80	2133.02	1.13
65. 57	ship building and repairing	12	12	14	368.15	428.76	398.46	0.21
66. 60	aircraft assembling and repairing services	3	3	4	252.93	252.93	252.93	0.13
67. 62	textiles machineries and accessories	11	11	14	204.17	374.71	289.44	0.15
68. 63	unspecified industries	139	139	212	8950.98	9265.84	9108.41	4.85
69. 99	all industries	1859	1859	2665	188942.43	187490.49	188216.45	100.00

# MANUFACTURING INDUSTRIES: 1952

TABLE 29. ESTIMATES OF OUTPUT & WORK DONE FOR OTHER CUSTOMERS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES PER

CMI classification		sample size (number of factories)			item : value of output (B) work done by the factory for customers unit : lakhs of rupees			percen- tage to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	48.34	29.28	38.81	0.54
2. 2	rice milling	116	116	201	303.90	114.28	169.09	2.23
3. 3	biscuit making	11	11	17	21.52	21.52	21.52	0.30
4. 4	fruits and vegetable processing	6	6	8	12.64	0.56	6.60	0.09
5. 5a	sugar : vacuum pan factory	81	81	94	1.20	1.29	1.25	0.02
6. 5b	" : reference	3	3	4	—	—	—	—
7. 5c	" : gur factories	9	9	16	6.93	8.37	7.65	0.11
8. 6	distilleries and breweries	15	15	20	0.05	0.05	0.05	0.00
9. 7	starch	6	6	10	0.02	1.56	0.79	0.01
10. 8	vegetable oil (including hydro- genated oil)	158	153	251	174.43	78.90	126.62	1.77
11. 9	paints and varnishes	11	11	16	—	—	—	—
12. 10	soap	23	23	26	0.54	0.54	0.54	0.01
13. 11	tanning	24	24	32	0.71	8.03	4.37	0.06
14. 12	cement	19	19	19	—	—	—	—
15. 13	glass and glassware	28	28	41	12.42	2.31	7.36	0.10
16. 14	ceramics	14	14	17	58.44	—	29.22	0.41
17. 15	plywood and tea chests	13	13	17	—	—	—	—
18. 16	paper and paper board	40	40	41	3.61	3.61	3.61	0.05
19. 17	matches	24	24	28	1.05	1.05	1.05	0.01
20. 18	cotton textiles : unclassified	7	7	9	2.04	2.04	2.04	0.03
21. 18a	" : spinning mills	28	28	34	—	—	—	—
22. 18b	" : composite mills	163	163	284	623.92	500.45	562.18	7.87
23. 18c	" : powerloom mills	12	12	20	3.98	1.63	2.80	0.04
24. 19	woollen textiles	17	17	20	16.49	2.66	9.57	0.13
25. 20	jute textiles	56	56	67	2.29	2.06	2.17	0.03
26. 21	chemicals (including drugs)	42	42	36	0.03	62.28	31.16	0.44
27. 22a	aluminium, copper and brass : primary products	4	4	4	—	—	—	—
28. 22b	" : secondary products	39	39	53	69.99	30.93	50.46	0.71
29. 23a	iron and steel : primary products	7	7	7	0.25	0.25	0.25	0.00
30. 23b	" : secondary products	57	57	87	95.44	88.72	92.08	1.29
31. 24	bicycles	9	9	11	0.68	0.53	0.61	0.01
32. 25	sewing machines	6	6	6	—	—	—	—
33. 27	electric lamps	7	7	7	—	—	—	—

TABLE 29 (Contd.) ESTIMATES OF OUTPUT (B) WORK DONE FOR OTHER CUSTOMERS IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of output (B) work done by the factory for customers unit : lakhs of rupees			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
34. 28	electric fans	8	8	9	1.06	35.71	18.38	0.26
35. 29	general engineering and electrical engineering : unspecified	11	11	17	5.57	13.66	9.61	0.13
36. 29a	" " : repairing works	19	19	32	570.18	319.72	445.25	6.23
37. 29b	" " : manufacturing	46	46	68	169.35	229.64	199.49	2.79
38. 30	footwear and leather manufacturing	12	12	12	12.63	—	6.32	0.09
39. 31	rubber and rubber manufacturing	36	36	46	4.66	1.34	3.00	0.04
40. 32	enamelware	3	3	5	—	22.03	11.02	0.15
41. 33	hume pipes and other cement and cement concrete products	8	8	11	22.60	3.64	13.92	0.18
42. 34	asbestos and asbestos cement products	5	5	5	—	—	—	—
43. 35	bricks, tiles, lime and surki manu- facturing	10	10	17	—	0.89	0.45	0.01
44. 36	lao	5	5	6	—	—	—	—
45. 37	turpentine and rosin	3	3	3	—	—	—	—
46. 38	plastics (including gramophone records)	5	5	8	—	—	—	—
47. 39	petroleum refining	3	3	3	—	—	—	—
48. 40	saw milling	17	17	17	80.40	27.71	54.06	0.76
49. 41	woodware (including furniture)	9	9	16	0.03	11.62	5.82	0.08
50. 42	tea manufacturing	62	62	121	22.45	37.12	29.78	0.42
51. 43	tobacco products	46	46	51	35.69	35.56	35.63	0.50
52. 44	groundnut decortivating etc.	25	25	36	138.27	32.52	85.39	1.20
53. 45	printing and bookbinding etc.	37	37	70	728.93	1122.78	925.85	12.97
54. 46	webbing narrow fabrics	5	5	8	0.12	0.12	0.12	0.00
55. 47	hosiery and other knitted goods	7	7	12	—	10.98	5.49	0.08
56. 48	thread and thread ball making	2	2	3	—	—	—	—
57. 49	textiles dyeing, bleaching etc.	17	17	24	440.80	476.22	458.51	6.42
58. 50	clothing and tailoring	3	3	4	—	—	—	—
59. 51	cotton ginning and pressing	89	89	173	1047.85	1016.02	1031.94	14.44
60. 52	rope making	5	5	6	—	0.57	0.28	0.00
61. 53	silk and artificial silk	23	23	35	32.81	36.30	34.55	0.48
62. 54	jute pressing	8	8	11	93.62	68.94	81.28	1.14
63. 55	electricity generation and trans- formation	20	20	30	49.44	49.44	49.44	0.69
64. 56	automobiles and coach building	63	63	92	1151.58	961.66	1056.62	14.79
65. 57	ship building and repairing	12	12	14	868.88	833.12	851.00	11.92
66. 60	aircraft assembling and repairing services	3	3	4	136.81	136.81	136.81	1.91
67. 62	textile machineries and accessories	11	11	14	68.19	0.59	34.39	0.48
68. 63	unspecified industries	139	139	212	439.87	357.50	398.69	5.58
69.	all industries	1859	1859	2665	7483.30	6805.01	7144.14	100.00

# MANUFACTURING INDUSTRIES: 1952

TABLE 30: ESTIMATES OF TOTAL OUTPUT IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES: 1952

C.M.I. (continued)		sample size			Item : value of total output			Percentage to all factories using power
S.N.	Description	Number of factories			in lakhs of rupees			
		1	2	3	1	2	3	
1	2	3	4	5	6	7	8	9
1	1 wheat flour	27	27	38	2457.15	2131.33	2294.24	1.17
2	2 rice milling	116	116	201	7301.22	7735.61	7518.42	3.85
3	3 biscuit making	11	11	17	696.21	347.91	622.32	0.32
4	4 fruits and vegetable processing	6	6	8	54.22	153.87	104.04	0.05
5	5a sugar : vacuum pan factory	81	81	94	16020.22	9725.56	10242.40	5.28
6	5b " : refineries	4	4	4	121.50	121.50	121.50	0.06
7	5c " : gur factories	9	9	16	132.18	230.38	161.38	0.09
8	6 distilleries and breweries	15	15	20	394.49	862.05	628.22	0.32
9	7 starch	6	6	10	514.91	73.05	293.98	0.15
10	8 vegetable oil (including hydro- genated oil)	158	157	251	14988.58	10344.70	15215.66	8.31
11	9 paints and varnishes	11	11	16	722.44	1708.90	1215.67	0.62
12	10 soap	23	23	26	2533.41	2390.00	2461.70	1.26
13	11 tanning	24	24	32	794.06	803.00	798.53	0.41
14	12 cement	19	19	19	2298.93	2298.93	2298.93	1.18
15	13 glass and glassware	28	28	41	581.68	718.44	650.05	0.33
16	14 ceramics	14	14	17	570.70	540.11	555.40	0.28
17	15 plywood and tea chests	13	13	17	473.18	324.49	398.83	0.20
18	16 paper and paper board	40	40	41	2168.99	2138.21	2153.60	1.10
19	17 matches	24	24	28	783.07	793.53	788.30	0.40
20	18 cotton textiles : unclassified	7	7	9	741.03	731.45	721.24	0.37
21	18a " : spinning mills	28	28	34	5984.20	5357.35	5220.74	2.67
22	18b " : composite mills	163	163	184	40942.14	38042.75	39492.44	20.15
23	18c " : powerloom mills	12	12	20	2083.34	1590.14	1836.74	0.94
24	19 woollen textiles	17	17	20	994.75	1938.22	1466.48	0.75
25	20 jute textiles	56	56	67	16997.20	17334.07	16165.53	8.81
26	21 chemicals (including drugs)	42	42	56	6001.12	5441.12	5671.12	2.90
27	22a aluminium, copper and brass : primary products	4	4	4	380.80	380.80	380.80	0.19
28	22b " " : secondary products	39	39	53	3590.23	1410.59	2500.41	1.28
29	23a iron and steel : primary products	7	7	7	6017.63	6017.63	6017.63	3.09
30	23b " : secondary products	57	57	87	4293.93	4442.38	4368.16	2.24
31	24 bicycles	9	9	11	253.92	250.66	252.99	0.13
32	25 sewing machines	6	6	6	117.30	117.30	117.30	0.06
33	27 electric lamps	7	7	7	144.60	144.60	144.60	0.07



TABLE 30 (Contd.) ESTIMATES OF TOTAL OUTPUT IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value of total output unit : lakhs of rupees			percent- age to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
34. 28	electric fans	8	8	9	246.47	250.69	248.57	0.13
35. 29	general engineering and electrical engineering : unspecified	11	11	17	846.10	1335.60	1090.85	0.56
36. 29a	„ „ : repairing works	19	19	32	1208.03	961.01	1084.52	0.56
37. 29	„ „ : manufacturing	46	46	68	1946.64	2566.41	2256.53	1.31
38. 30	footwear and leather manufacturing	12	12	13	854.69	842.06	848.38	0.43
39. 31	rubber and rubber manufacturing	36	36	46	2648.66	2721.62	2685.14	1.37
40. 32	enamelware	3	3	5	94.83	101.46	98.15	0.05
41. 33	hume pipes and other cement and cement concrete products	8	8	11	129.51	216.07	172.79	0.09
42. 34	asbestos and asbestos cement products	5	5	5	209.06	209.06	209.06	0.11
43. 35	bricks, tiles, lime and surki manu- facturing	10	10	17	500.68	462.28	481.48	0.25
44. 36	lac	5	5	6	183.26	178.37	180.82	0.09
45. 37	turpentine and rosin	3	3	3	74.32	74.32	74.32	0.04
46. 38	plastics (including gramophone records)	5	5	8	183.03	320.34	251.69	0.13
47. 39	petroleum refining	3	3	3	723.65	723.65	723.65	0.37
48. 40	saw milling	17	17	25	276.28	365.80	321.04	0.16
49. 41	woodware (including furniture)	9	9	16	209.03	124.96	166.99	0.09
50. 42	tea manufacturing	62	62	121	11578.25	10796.14	11187.19	5.74
51. 43	tobacco products	46	46	51	4312.15	4058.37	4185.26	2.13
52. 44	groundnut decorticating etc.	25	25	36	1655.38	1706.13	1680.75	0.86
53. 45	printing and bookbinding etc.	37	37	70	3711.45	2993.51	3352.48	1.72
54. 46	webbing narrow fabrics	5	5	8	173.05	142.41	157.74	0.08
55. 47	hosiery and other knitted goods	7	7	12	399.27	1021.91	710.59	0.36
56. 48	thread and thread ball making	2	2	3	43.80	43.80	43.80	0.02
57. 49	textiles dyeing, bleaching etc.	17	17	24	712.98	940.01	826.49	0.42
58. 50	clothing and tailoring	3	3	4	149.95	103.76	126.85	0.06
59. 51	cotton ginning and pressing	89	89	173	6234.76	4520.52	5422.64	2.78
60. 52	rope making	5	5	6	134.64	131.88	133.25	0.07
61. 53	silk and artificial silk	23	23	35	2256.77	2096.56	2176.66	1.11
62. 54	jute pressing	8	8	11	119.27	94.59	106.93	0.05
63. 55	electricity generation and trans- formation	20	20	30	5719.93	3708.74	4714.33	2.41
64. 56	automobiles and coach building	63	63	92	3286.82	3092.46	3189.64	1.62
65. 57	ship building and repairing	12	12	14	1237.03	1261.89	1249.46	0.64
66. 60	aircraft assembling and repairing services	3	3	4	389.74	389.74	389.74	0.20
67. 62	textile machineries and accessories	11	11	14	272.36	375.31	323.83	0.17
68. 63	unspecified industries	139	139	21	9390.84	9623.35	9507.11	4.34
69.	all industries	1859	1859	2665	196425.81	194295.49	195360.59	100.00

# MANUFACTURING INDUSTRIES : 1952

TABLE 31 : ESTIMATES OF VALUE ADDED IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES : 1952

CMI classification		sample size (number of factories)			item : value added unit : lakhs of rupees			percentage to all industries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 1	wheat flour	27	27	38	218.11	117.97	168.04	0.29
2. 2	rice milling	116	116	201	622.14	514.04	568.09	0.97
3. 3	biscuit making	11	11	17	229.05	173.41	201.23	0.34
4. 4	fruits and vegetable processing	6	6	8	20.87	56.85	38.85	0.07
5. 5a	sugar : vacuum pan factory	81	81	94	2658.45	2544.45	2601.45	4.45
6. 5b	„ : refineries	3	3	4	19.29	19.29	19.29	0.03
7. 5c	„ : gur factories	9	9	16	17.51	54.18	35.85	0.06
8. 6	distilleries and breweries	15	15	20	192.14	461.74	326.94	0.56
9. 7	starch	6	6	10	151.07	14.63	82.86	0.14
10. 8	vegetable oil (including hydro- genated oil)	158	158	251	879.43	1856.79	1368.13	2.35
11. 9	paints and varnishes	11	11	16	242.83	528.98	385.91	0.66
12. 10	soap	23	23	26	867.09	821.68	844.38	1.45
13. 11	tanning	24	24	32	166.63	143.82	155.23	0.27
14. 12	cement	19	19	19	991.33	991.33	991.33	1.70
15. 13	glass and glassware	28	28	41	213.79	276.46	245.12	0.42
16. 14	ceramics	14	14	17	351.58	311.02	331.30	0.57
17. 15	plywood and tea chests	13	13	17	139.15	110.58	124.86	0.21
18. 16	paper and paper board	40	40	41	867.48	854.37	860.93	1.47
19. 17	matches	24	24	28	365.62	355.82	360.72	0.62
20. 18	cotton textiles : unclassified	7	7	9	206.86	239.97	223.41	0.38
21. 18a	„ : spinning mills	28	28	34	1326.26	1184.70	1255.48	2.15
22. 18b	„ : composite mills	163	163	184	12130.44	11136.27	11633.34	19.90
23. 18c	„ : powerloom mills	12	12	20	419.80	407.85	413.60	0.71
24. 19	woollen textiles	17	17	20	332.12	806.29	569.19	0.97
25. 20	jute textiles	56	56	67	5072.45	5013.68	5043.06	8.68
26. 21	chemicals (including drugs)	42	42	56	2273.30	2295.34	2284.32	3.91
27. 22a	aluminium, copper and brass : primary products	4	4	4	61.34	61.34	61.34	0.10
28. 22b	„ „ : secondary products	39	39	53	350.87	326.09	338.49	0.58
29. 23a	iron and steel : primary products	7	7	7	2981.25	2981.25	2981.25	5.10
30. 23b	„ : secondary products	57	57	87	1662.26	1554.48	1608.38	2.75
31. 24	bicycles	9	9	11	112.80	111.85	112.32	0.19
32. 25	sewing machines	6	6	6	87.38	87.38	87.38	0.15
33. 27	electric lamps	7	7	7	77.43	77.43	77.43	0.13
34. 28	electric fans	8	8	9	123.72	117.70	120.71	0.21

TABLE 31 (cont.) ESTIMATES OF VALUE ADDED IN FACTORIES USING POWER BY INDUSTRIES AND SUB-SAMPLES: 1952

C.M.I. Classification		sample size (number of factories)			item : value added unit : lakhs of rupees			percen- tage to all indus- tries total
number	description	sub- sample 1	sub- sample 2	com- bined	sub- sample 1	sub- sample 2	com- bined	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
33. 29	general engineering and electrical engineering : unspecified	11	11	17	386.30	449.25	417.78	0.72
36. 29a	" " : repairing works	19	19	32	643.79	405.13	524.46	0.90
37. 29b	" " : manufacturing	46	46	68	853.22	1112.25	982.73	1.68
38. 30	footwear and leather manufacturing	12	12	13	394.86	391.18	393.01	0.67
39. 31	rubber and rubber manufacturing	36	36	46	920.98	1046.16	983.57	1.68
40. 32	enamelware	3	3	5	56.93	56.85	56.89	0.10
41. 33	hume pipes and other cement and cement concrete products	8	8	11	59.62	129.76	94.69	0.16
42. 34	asbestos and asbestos cement products	5	5	5	38.59	38.59	38.59	0.07
43. 35	bricks, tiles, lime and surki manufacturing	10	10	17	274.04	251.20	262.62	0.45
44. 36	lac	5	5	6	44.08	46.01	45.05	0.08
45. 37	turpentine and rosin	3	3	3	18.66	18.66	18.66	0.03
46. 38	plastics (including gramophone records)	5	5	8	66.35	107.05	86.71	0.15
47. 39	petroleum refining	3	3	3	451.77	451.77	451.77	0.77
48. 40	saw milling	17	17	25	127.46	124.21	125.84	0.21
49. 41	woodware (including furniture)	9	9	16	67.63	63.93	65.78	0.11
50. 42	tea manufacturing	62	62	121	3179.15	3632.36	3405.76	5.83
51. 43	tobacco products	46	46	51	776.21	798.97	787.59	1.35
52. 44	groundnut decorticating etc.	25	25	36	258.91	161.66	210.29	0.36
53. 45	printing and bookbinding etc.	37	37	70	1778.70	1477.04	1627.87	2.87
54. 46	webbing narrow fabrics	5	5	8	44.27	45.71	44.99	0.08
55. 47	hosiery and other knitted goods	7	7	7	146.74	326.14	236.44	0.40
56. 48	thread and thread ball making	2	2	3	1.71	1.71	1.71	0.00
57. 49	textiles dyeing, bleaching etc.	17	17	24	250.97	322.16	286.55	0.49
58. 50	clothing and tailoring	3	3	4	19.79	2.67	11.23	0.02
59. 51	cotton ginning and pressing	89	89	173	1370.28	962.09	1166.19	2.00
60. 52	rope making	5	5	6	27.88	29.26	28.56	0.05
61. 53	silk and artificial silk	23	23	35	599.34	602.75	601.04	1.03
62. 54	jute pressing	8	8	11	92.48	68.78	80.64	0.14
63. 55	electricity generation and trans- formation	20	20	30	3305.24	1989.18	2647.20	4.53
64. 56	automobiles and coach building	63	63	92	1144.63	1095.47	1120.05	1.92
65. 57	ship building and repairing	12	12	14	910.64	921.61	916.13	1.57
66. 60	aircraft assembling and repairing services	3	3	4	137.80	137.80	137.80	0.24
67. 62	textile machineries and accessories	11	11	14	165.68	168.01	166.84	0.29
68. 63	unspecified industries	139	139	212	3676.56	4081.63	3879.11	6.64
69.	all industries	1859	1859	2665	58722.68	58126.03	58424.35	100.00



# APPENDIX II

## FACSIMILE OF THE SCHEDULES OF INVESTIGATION

### NATIONAL SAMPLE SURVEY, 1953

#### ESTABLISHMENT SCHEDULE : MANUFACTURING INDUSTRIES, 1952

(1) identification code		(2) geographical location		(3) operation details			
1. industry		1. district		1. whether permanent or seasonal 1-2			
2. stratum		2. tehsil/taluka		3. if seasonal, normal season			
3. sample unit no.		3. town		4. months of operation in 1952			
4. village		4. post office		5. year of start of manufacture			
5. zone		5. name of factory		6. state of closing yearly accounts			
6. state		6. type of ownership					
(4) capital structure							
	item	amount in Rs. as on		value of additions and improvements less disposals and sales during the year (Rs.)	cost paid for fixed assets during year ended on		age in years
		31-12-51	31-12-52		31-12-52	31-1-53	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	fixed capital						
1.	land						x
2.	building						x
3.	sub-total (1+2)						
4.	plant, machinery etc.						
5.	other fixed assets						x
6.	total fixed capital (3+4+5)						
	working capital						
7.	raw materials, fuel, etc.			x			
8.	product, finished and semi-finished			x			
9.	cash in hand and at bank			x			
10.	total working capital (7+8+9)			x			
11.	total (6+10)						
(5) duration of work							
					sr. no.	item	1952
					(0)	(1)	(2)
					1.	no. of working days	
					2.	shifts per day	
					3.	length of shift (hrs.)	
(6) labour employed and their emoluments							
sr. no.	item	total man hours		average number employed per working day		salaries, wages and other emoluments (Rs.)	
		1952	1952-53	1952	1952-53	1952	1952-53
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	workers direct						
2.	men						
3.	women						
4.	children (above 14, below 18)						
5.	sub-total (1+2+3)						
6.	workers employed through contractor	x	x				
7.	total : (4+5)	x	x				
8.	other than workers	x	x				
9.	individual benefits (in kind)	x	x	x	x		
10.	contributions to funds (p.f., etc.)	x	x	x	x		
11.	group benefits	x	x	x	x		
12.	total (6+7+8+9+10)	x	x	x	x		
(7) employment : change in volume							
sr. no.	item	number as on					
		1-1-52	31-2-52	31-12-52	31-3-53		
(0)	(1)	(2)	(3)	(4)	(5)		
1.	workers employed directly						
2.	workers employed through contractor						
3.	sub-total (1+2)						
4.	supervisory employees						
5.	other employees						



(1)

B) Fuel, lubricant and electricity consumed during						
sr. no.	item	unit	1952		1952-53	
			quantity	value (Rs.)	quantity	value (Rs.)
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1.	radio and coal	ton				
2.	petroleum	gallon				
3.	other fuel oils & lubricating oils	gallon				
4.	other fuels	"	"		"	
5.	electricity	k. w. h.				
6.	water	1000 gallon				
7.	total	"	"		"	

C) raw materials, chemicals, packing materials etc. consumed during						[11] total input			
sr. no.	item	unit	1952		1952-53		work done for the factory by other concerns (Rs.)		
			quantity	value (Rs.)	quantity	value (Rs.)			
(0)	(1)	(2)	(3)	(4)	(5)	(6)			
1.	basic materials						1. 1952 .....		
2.							2. 1952-53 .....		
3.							total input (Rs.) .....		
4.	others						3. 1952 .....		
5.	sub-total	x	x		x		4. 1952-53 .....		
6.	chemicals						[12] total output		
7.							work done by the factory for other concerns (Rs.)		
8.							1. 1952 .....		
9.	others						2. 1952-53 .....		
10.	sub-total	x	x		x		total output (Rs.) .....		
11.	packing materials						3. 1952 .....		
12.							4. 1952-53 .....		
13.	sub-total	x	x		x		[13] housing provision for the employees		
14.	others including consumable stores	x	x		x		sr. no. type of employee number provided with accommodation by the factory as on 31.3.53		
15.	transport charges etc. not included in purchase value.	x	x		x		own rented		
16.	total (5+10+13+14+15)	x	x		x		(0) (1) (2) (3)		

[10] products, by-products and subsidiary products during							
sr. no.	item	unit	1952		1952-53		
			quantity	value (Rs.)	quantity	value (Rs.)	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	
1.	products						1. workers
2.							2. other than workers
3.							3. total
4.							Signature of investigator.....
5.							
6.							
7.							
8.	sub-total	x	x		x		
9.	by-products						signature of superintendent.....
10.							
11.	sub-total	x	x		x		
12.	subsidiary products						
13.							
14.	sub-total	x	x		x		date .....
15.	total (8+11+14)	x	x		x		

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